

# COMPUTERS AND AUTOMATION

YBERNETICS • ROBOTS • AUTOMATIC CONTROL

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## THE COMPUTER DIRECTORY 1956

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JULY 1956  
SALT LAKE CITY*  
the June, 1956, issue of  
"Computers and Automation"

Part 1: Roster of Organizations in the Computer Field  
(cumulative)

Part 2: The Market Place — The Computer Field: Products and  
and Services for Rent or Sale  
(cumulative)

Part 3: Who's Who in the Computer Field  
(supplement)

Part 4: Roster of Automatic Computers  
(cumulative)

# 3 NEW CLARE MERCURY-WETTED CONTACT RELAYS TO HANDLE MULTIPLE CIRCUITS



These relays contain 2, 3, or 4 magnetic switches. Each switch is hermetically sealed in a high pressure hydrogen atmosphere in a glass capsule. Platinum contact surfaces are continuously wetted with mercury by capillary connection to mercury reservoir.

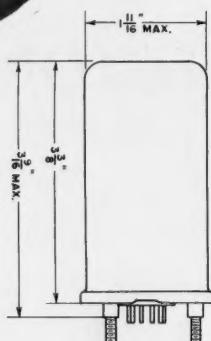


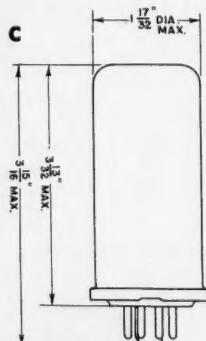
Photo and dimensional drawing of steel can in which 4 Form C switches are enclosed with coil. Plug-in header shown.

4 FORM C



2 OR 3 FORM C

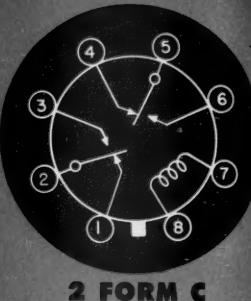
Photo and dimensional drawing of steel can for either 2 or 3 Form C switches. Octal base plug shown is for 2 Form C. An 11 pin base is standard for 3 Form C. Solder terminals also available.



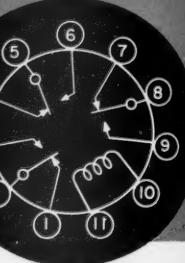
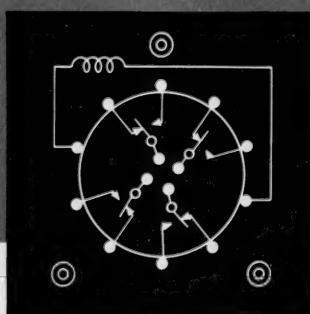
## FOR COMPLETE INFORMATION

on CLARE Mercury-Wetted Contact Relays for single or multiple circuits contact your nearest CLARE representative or address: C. P. Clare & Co., 3101 Pratt Blvd., Chicago 45, Illinois.

Send for CLARE Sales Engineering Bulletin No. 120



TYPICAL BASE CONNECTION DIAGRAMS



3 FORM C

## SAVE SPACE, MONEY and POWER

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**LONG LIFE:** Conservative life expectancy of over a billion operations when operated within ratings.

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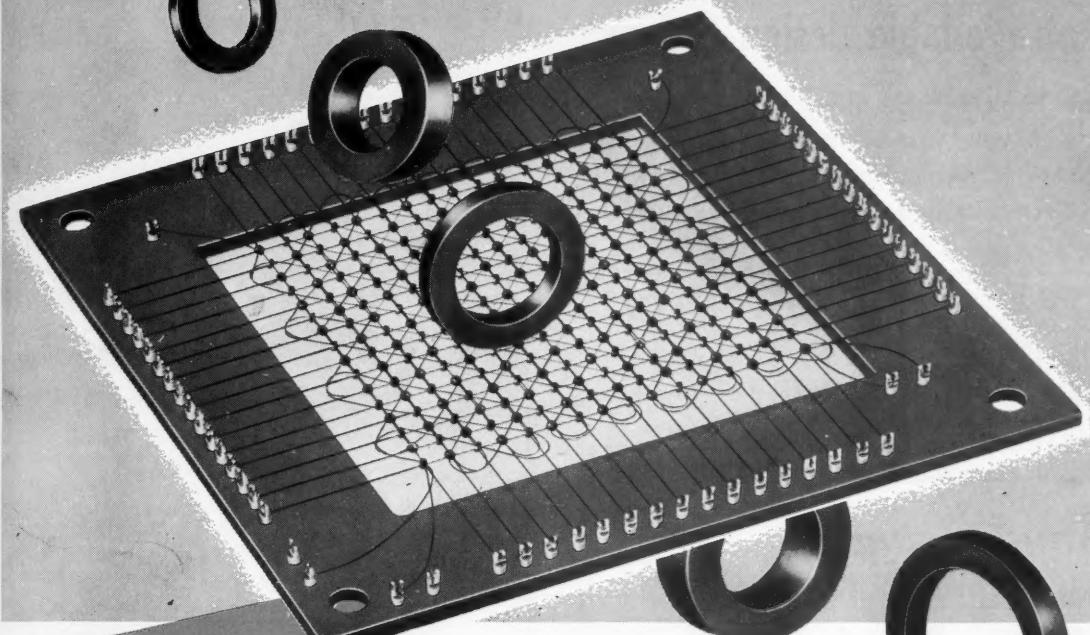
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- Maintenance-free
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- Adjustment cannot change

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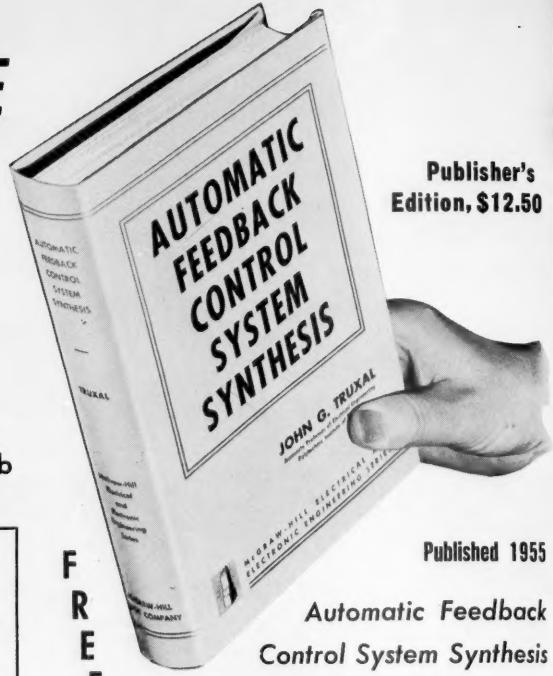
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# COMPUTERS AND AUTOMATION

## CYBERNETICS • ROBOTS • AUTOMATIC CONTROL

ne, 1956

Vol. 5, No. 6

ESTABLISHED SEPTEMBER, 1951

### REFERENCE INFORMATION

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## THE EDITOR'S NOTES

### THE COMPUTER DIRECTORY, 1956

The second edition of The Computer Directory, 1956, the June issue of "Computers and Automation", is here presented, 100 pages long, with the hope that it will prove to be useful, in fact essential, to people who are in the Computer Field. Suggestions for improvement will be welcome.

"Part 1, Roster of Organizations in the Computer Field", contains 373 entries on 18 pages. Many of these entries have been based on information provided by the organization itself, and have been improved from time to time as changes have been reported. This Roster is, as we have mentioned, before, the reason for our existence, since the first issue, Vol. 1 No. 1 in September 1951, consisted only of a purple ditto list of organizations in the computer field.

After the closing date for the Roster of Organizations, we found that there were some additions and changes. Perhaps no list of this kind remains up to date for more than a few minutes after it is finished. These changes we shall put into the next issue, July.

"Part 2, The Market Place -- The Computer Field: Products and Services for Sale or Rent" contains slightly over 700 entries on 35 pages. This is larger than last year's, which contained about 600 entries on 21 pages. The amount and reliability of information has been increased considerably, particularly in the case of what we call Class One entries, those for which the name of the supplier has been written printed all in capitals.

"Part 3, Who's Who in the Computer Field" is a supplement. It contains about 300 entries on 9 pages. These entries are all of them relatively current, containing information received by us since October of last year. Our appreciation is expressed to those persons, about one third of those listed, who contributed towards the cost of preparing and printing the Who's Who.

We shall continue to look into ways and means for printing a complete cumulative Who's Who, following up suggestions made from several sources, that organizations and not individuals finance the cost of preparing and printing the

Who's Who. It is quite clear that many people feel that the individuals listed should not bear the cost.

"Part 4, List of Automatic Computers", contains about 220 entries (excluding cross references) on 6 pages. This brings up to date a list which was last published in February and April 1955.

As usual, we ask our readers to be kind enough to tell us of additions, corrections, and revisions, so that we can continue to make the reference information that we publish useful and reliable.

#### CORRECTIONS

In the April issue, the name of the author of "Tape Identification and Rerun Procedures" is L. Eselson and not L. Eallson. Please change this unfortunate error, which occurred due to a misreading of handwriting, on page 1, page 3, and page 12.

In the May issue, in the story "The Mechanized Muse", the second page of the story is on page 13, and the third page is on page 12.

Your editor likes this department of the magazine the least of all, and quotes with feeling from the April issue of "Scientific American", p. 166:

...confirms this department's sad experience that editors as well as laboratory workers are subject to Murphy's Laws:

I. If something can go wrong, it will.

II. When left to themselves, things always go from bad to worse.

III. Nature always sides with the hidden flaw.

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## ROSTER OF ORGANIZATIONS IN THE COMPUTER FIELD

(Cumulative, information as of May 3, 1956)

The purpose of this Roster is to report organizations (all that are known to us) in the computer field: organizations making or developing computing machinery or data-processing machinery; organizations supplying computing services or consulting services in the computer field; and organizations supplying components or services used in the computer field if significantly related to the field (for example, magnetic drums would be such a component, while octal sockets would not be).

Entries. Each Roster entry if complete contains: name of the organization, its address / telephone number / description of its main activities, main products in the field, any comments / size (expressed in number of employees), year established, nature of its interest in the computer field, types of activities it engages in. The last four items are reported in abbreviations, which are explained below. In cases where we did not have complete information, we have put down what we have. Entries in this Roster are free.

Accuracy. We have tried to make each entry accurate to the extent of information in our possession. We shall be grateful for any more information or additions or corrections that anyone is kind enough to send us. Although we have tried to be accurate and complete, we assume no liability for any statements expressed or implied.

### Abbreviations

The key to the abbreviations follows:

#### Size

Ls Large size, over 500 employees  
Ms Medium size, 50 to 500 employees  
Ss Small size, under 50 employees (no. in parentheses is approx. no. of employees)

#### When Established

Le Long established organization (1925 or earlier)  
Me Organization established a "medium" time ago (1926 to 1945)  
Se Organization established a short time ago (1946 or later) (no. in parentheses is year of establishment)

#### Interest in Computers and Automation

Dc Digital computing machinery  
Ac Analog computing machinery  
Ic Incidental interests in computing machinery  
Sc Servomechanisms  
Cc Automatic control machinery  
Mc Automatic materials handling machinery

#### Activities

Ma Manufacturing activity  
Sa Selling activity  
Ra Research and development  
Ca Consulting  
Ga Government activity  
Pa Problem-solving  
Ba Buying activity  
(Used also in combinations as in RNSA a "research, manufacturing and selling activity")

\*C This organization has kindly furnished us with information expressly for the purposes of the Roster and therefore our report is likely to be more complete and accurate than otherwise might be the case. (C for Checking)

#### Organization Entry Form

The form to be completed for an entry in the Roster of Organizations follows:

1. Your organization's name? \_\_\_\_\_
2. Address? \_\_\_\_\_
3. Telephone number? \_\_\_\_\_
4. Types of computing machinery or components, or computer-field products and services that you are interested in?  
\_\_\_\_\_  
\_\_\_\_\_
5. Types of activity that you engage in:  
( ) research ( ) other (please explain):  
( ) manufacturing  
( ) selling  
( ) consulting  
\_\_\_\_\_
6. Approximate number of your employees? \_\_\_\_\_
7. Year when you were established? \_\_\_\_\_
8. Any comments? \_\_\_\_\_  
\_\_\_\_\_

Filled in by \_\_\_\_\_

Title \_\_\_\_\_ Date \_\_\_\_\_

**Roster of Organizations**

**ROSTER**

**A**

ACF Electronics, Division of ACF Industries, Inc.,  
800 No. Pitt St., Alexandria, Va. / King 8-4440/  
\*C

Coders, decoders, servo-systems, display equipment, special instruments. Ms(375) Se(1954) Ic RMSa

ACF Industries -- SEE ACF Electronics AND Avion Division

Adalia Limited, Castle Bldg., 1410 Stanley St., Montreal, P.Q., Canada / Marguette 2281

Research and consulting services in the application, design and construction of computers. Computing services; problem analysis, programming, coding. Have Alwac III-E general purpose electronic digital computer. Ss Se (1952) Dac RCPa

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17, Ohio / Redwood 1-8000 / and elsewhere / \*C

Electronic facsimile printers for high-speed copying of typed data contained in unit card records. Addressograph sensing plates, composed automatically from punched tape, which will automatically list and total figures. Data written at speeds up to 30 forty-character lines per second; as a byproduct, codes automatically punched into punch cards. Transfer printers. Ls(2500) Le(1903) Ic RM Sa

Aero Research Instrument Co., Inc., 1040 W. Grand Ave., Chicago 22, Ill. / Taylor 9-6400 / \*C

Data reduction and data gathering systems. Ss(30) Se(1953) Dc RMSa

Aircraft-Marine Products, Inc., 2100 Paxton Street, Harrisburg, Pa. / Harrisburg 4-0101 / \*C

Patchcord programming systems, patchcords, automatic wire terminators, taper pins (single and multiple), capacitors, etc. Ls(1600) Me(1941) Ic RMSa

Aladdin Radio Industries, Inc., 703 Murfreesboro Rd., Nashville, Tenn. / Chapel 2-3411 / \*C

Research, development, and production of pulse transformers, magnetic shift registers, and logical computer elements utilizing magnetic materials. Other products. Ms(75) Me(1934) Ic RMSa

Alden Electronic and Impulse Recording Equipment Co., Alden Research Center, Westboro, Mass. / Westboro 467 / \*C

Facsimile recording equipment and facsimile components. "On-the-Spot Fact Finders", pulse records, automatic curve plotters. Recorder that monitors any machine or action and records automatically. Ms Se Ic RMSa

Alden Products Co., 117 No. Main St., Brockton, Mass. / Brockton 160 / \*C

General and specific components for digital and analog computing machinery; plug-in components, sensing and indicating components, magnetic delay line units, magnetic storage cores, etc. Ms(300) Me(1930) Ic RMSa

Alfax Paper and Engineering Co., Alden Research Center, Westboro, Mass. / Westboro 467 / \*C

Electrosensitive recording papers. Ms Me (1942) Ic RMSa

R. C. Allen Business Machines, Inc., 678 Front Av., Grand Rapids 4, Mich. / Glendale 6-8541 / \*C

Adding machines, bookkeeping machines, cash

registers, gyro instruments, etc. Ls(1250) Me(1932) Dic RMSa

Alpha Computing, Inc., 436 S. Sepulveda Blvd., Los Angeles 49, Calif. / Granite 27787 / \*C Computing service using both medium and large computers for scientific and engineering problems. Ss Se(1955) Dc CPa

American Automatic Typewriter Co., 2323 No. Pulaski Rd., Chicago 39, Ill. / Everglade 4-5151 / \*C

Pneumatically controlled programming and testing devices. Automatic selective typing equipment (Autotypist). Testing machines for typewriters, adding machines, calculating machines. Ms(100) Le(1869) Ic RMSa

American Electronics, Inc., 655 West Washington Blvd., Los Angeles, Calif. / Richmond 9-7671 / \*C Components for analog and digital computers; servomechanisms; resolvers, synchros, servo motors, etc. Ls(600) Me(1945) Ic RMSa

American Machine and Foundry, Electronics Division, 1085 Commonwealth Ave., Boston, Mass. / Algonquin 4-4234 / \*C

Magnetic shift register, digital data-handling equipment; data readout and display, servo-mechanisms to specifications. Digital servo with 215 quantum units per revolution (shaft to digital conversion). Ls(800) Se(1948) Dc RMSa

Amperite Co., Inc., 561 Broadway, New York 12, N.Y. / Canal 6-1446 / \*C

Delay relays and regulators for computers, etc. Ms(75) Le(1923) Ic RMSa

Amplex Corp., 934 Charter St., Redwood City, Calif. / Emerson 8-1471 / \*C

Magnetic recording of data. Input-output equipment. Digital and analog magnetic storage devices. Ls(800) Me(1944) Ic RMSa

Andersen Laboratories, Inc., 39 Talcott Rd., West Hartford 10, Conn. / Adams 3-4491 / \*C

Solid ultrasonic delay lines, computer memories, etc., for computer applications. Radar. Very large delay lines. Ss(32) Se(1951) Ic RMSa

Analex Corp., Concord, N. H., and 150 Causeway St., Boston 14, Mass. / Richmond 2-3400 / \*C

High-speed printer (1800 characters per second), numerical and alpha-numeric up to 64 characters and line-lengths up to 120 characters. Ms Se(1952) Dic RMSa

Applied Science Corporation of Princeton, P.O. Box 44, Princeton, N. J. / Plainsboro 3-4141 / \*C

Radio telemetering and automatic data conversion. Devices for automatic and semi-automatic reduction and analysis of telemetering and radar data. Analog read-in and read-out devices. Digital storage and computing elements MADAM (Multipurpose Automatic Data Analysis Machine). Ms(85) Se(1946) Dac RCPMSa

Argonne National Laboratory, Box 299, Lemont, Ill. / Lemont 800 / \*C

Maker of Avidac and Oracle automatic digital computers and other computers, for own use and other government agencies. Developing "George", new high speed computer, to be tested January, 1956. Ls(2500) Me(1942) DAc RGPa

Arma Corp., Old Country Rd., Garden City, Long Island, N. Y. / Garden City 3-2000 / \*C

Electronic fire-control apparatus. Analog computer components including resolvers, induction generators, etc. Basic weapon and

### Computers and Automation

control systems, navigational systems, precision remote control systems. Analog computer components. Ls(6000) Le DASc RMSPa

Armour Research Foundation, Illinois Institute of Technology, 10 West 35 St., Chicago 16, Ill. / Calumet 5-9600 / \*C

Magnetic recording. Digital, analog and data-handling equipment. Automatic control machinery. Servomechanisms. Instrumentation. Computing service: analog, digital; have Goodyear Electronic Digital Differential Analyzers, Two Channel Electronic Function Generator, card programmed calculator. Ls (1200) Me(1936) DASc RCPa

The Arnold Engineering Co., Marengo, Ill. / Chicago, Andover 3-6300 / \*C

Magnetic materials for computer components, tape-wound bobbin cores, etc. Ls(550) Me (1936) Ic RMSa

Askania Regulator Co., 240 E. Ontario St., Chicago, Ill. / Whitehall 4-3700 / \*C

Hydraulic and electronic automatic control equipment. Use analog computers; manufacture servomechanisms and automatic controls. Computing service: analog; Philbrick analog computer. Ms(400) Me(1930) ScC RMSPa

Atlas Precision Products Co., 3801 Castor Avenue, Philadelphia 24, Pa. / Jefferson 5-3700 / \*C

Mechanical analog computers for fire control, radar, etc.; geared mechanisms, servos, etc. Ms(300) Me(1928) Alc MSA

Atomic Instrument Co., 84 Mass. Ave., Cambridge 39, Mass. / Eliot 4-4321 / \*C

Analog to digital converters, printers, counter components and controls; shell velocity computation and recording; etc. Ms (100) Se(1947) DACc RMSCa

Audio Devices, Inc., 444 Madison Avenue, New York 22, N. Y. / Plaza 3-0973

Extra precision audio tape; magnetic recording tape for telemetering, electronic computers, etc. Magnetic tape guaranteed defect-free. Also, magnetic recording discs on aluminum base up to 17" diameter. Ms("under 500") Me(1937) Ic RMSa

Audio Instrument Co., Inc., 133 West 14 St., New York 11, N. Y. / Oregon 5-7820 / \*C

Electronic analog time-delay units from 10 to 10,000 milliseconds; logarithmic amplifiers. Specialized passive computer which corrects for film nonlinearity in photometric work, etc. Ss(10) Se(1949) ASCc RMSCa

Audio Products Corp., 2265 Westwood Blvd., Los Angeles 64, Calif. / Bradshaw 2-4266 / \*C

Digital plug circuits, i.e., triggers, cathode followers, binary scalers, etc. Ms(125) Se(1948) Ic RMSa

The Austin Co., Special Devices Division, 76 9th Ave., New York 11, N. Y. / Watkins 4-3630 / \*C

Systems and devices for automatic control in commerce and industry; analog, digital, data-handling, servo, electronic, electromechanical. Shaft position indicators and systems; cathode ray indicators and systems. Ls(division, 160; company 25,000) Me(division, 1943; company, 1878) DASCMs RMSa

Automacité Appliqué, 10 rue Saulnier, Paris 9e, France

Automatic control apparatus. Cc RMSa

Automatic Electric Co., 1033 West Van Buren St., Chicago 7, Ill. / Haymarket 1-4300 / \*C

Automatic electrical systems, telephone equipment, relays, stepping switches, etc., for computing machinery and communications companies. Automatic control components. Ls (6000) Le(1892) ICc RMSa

Automatic Signal Division, Eastern Industries, Inc., East Norwalk, Conn. / Temple 8-4791 / \*C

Automatic volume-density traffic controllers; digital and analog computers; servomechanisms. Ms(300) Me(1928) Ic MSA

Automation Consultants, Inc., 1450 Broadway, New York 18, N. Y. / Chickering 4-7800 / \*C

Consultants in electronic systems and devices, including automatic information-handling. Ss Se(1953) Dc Ca

Automation Engineers Co., Division of Associated Industrial Consultants, 246 West State Street, Trenton, N. J. / Export 3-2602 / \*C

Consultants in automatic control machinery and automatic materials handling equipment. Ss(20) Me(1942) DACMc Ca

Autron Engineering, Inc., 1254 West 6th St., Los Angeles 17, Calif. / Mutual 3237, 3331

Engineering design, development, and manufacture of electronic and electromechanical controls and automatic control systems, devices, and instruments. ?s Se(1955) Cc RMSa

Avion Division of American Car and Foundry Industries, Inc., 299 State Highway No. 17, Paramus, N. J. / Colfax 1-4100 / \*C

Analog computing machinery. Magnetic recorders, amplifiers, electronic choppers, test equipment, servomechanisms, automatic control machinery, etc. Ls(600) Se(1946) ASCMc RMSa

### B

Baird Associates, 33 University Road, Cambridge, 38, Mass. / University 4-0101 / \*C

Spectroscopic analysis equipment; scientific instruments; analog devices, servo-mechanisms; transistors. Instrumentation for industrial control: direct reading spectrometer, infrared spectrophotometer, desitometer comparator, plant stream analyzer, etc. Research in physical optics. Ms(250) Me(1936) AlSc RMSca

Battelle Memorial Inst., 505 King Ave., Columbus 1, Ohio / Ax 9-3191 / \*C

Computing service: analog, digital; differential analyzer, card programmed calculator, punch card machines. Many other activities. Ls(2500) Me(1929) Ic RCPa

Beckman Division, Beckman Instruments, Inc., Fullerton, Calif. / Lambert 5-8241 / \*C

Multi-channel digital data-handling systems; 200 channel strain gage recorder. Automatic process control, digital data-handling and recording. Ls(1800) Me(1934) DAIC RMSa

Beckman Instruments, Inc. — SEE Beckman Division AND Berkeley Division

Bell Telephone Laboratories, Murray Hill, N.J. / Summit 6-6000 / and 463 West St., New York 14, N. Y. / Chelsea 3-1000 / \*C

Automatic switching. Bell general purpose computers (relay and electronic, digital and analog) for government use and company's own use. Ls Le DAC RGPa

Bendix Aviation Corporation, Bendix Computer Division, 5630 Arbor Vitae St., Los Angeles 45,

**Roster of Organizations**

Calif. / Oregon 8-2120 / \*C  
 Electronic information processing machines. Small-size low-cost digital differential analyzers and general purpose digital computers; automatic control systems; Decimal Digit a l Differential Analyzer Model D-12; general purpose digital computers Model G-15A and G-15D; analog to digital conversion equipment. Data processing systems requiring computers. Ms(210) Se(1952, division; 1929 corporation) DACc RMSpa

Bendix Aviation Corp., Pacific Division, North Hollywood, Calif. / \*C  
 Telemetry systems. Digital systems, controls, and components. Ls(2500) Le(1915, company, 1937, this division) Ic RMSa

Bendix Aviation Corporation, Eclipse-Pioneer Division, Teterboro, N. J. / Hasbrouck Heights 8-2000 / \*C  
 Synchros, low inertia servo motors, pygmy servo motor generators, etc. Ls(7000) Le(1919) SIC MSA

Bendix Aviation Corporation, Research Laboratories Division, 4855 4th Ave., Detroit 1, Mich. / Temple 2-1300 / \*C  
 Electronic and electromechanical analog computers; numerically controlled machines; data processing equipment; servomechanisms, etc. Ms(400) Me(1942) ASCc Ra

Benge Associates, McIntyre Bldg., Spruce and College Sts., Asheville, N. C. / Asheville 2-0852 / \*C  
 Management engineers; applications of electronic data processing to office procedures; costs; analysis of clerical routines leading to programming. Ss Me(1939) Cc RCPa

Benson-Lehner Corp., 11930 W. Olympic Blvd., Los Angeles 64, Calif. / Br 2-3484, Gr 9-3723 / \*C  
 Automatic and semi-automatic devices (both analog and digital) for computing, data analyzing, data reduction, optical measuring, guided missile analysis, etc.; and geophysical seismic reader and profile plotter. Oscillogram trace readers, film readers, plotters, etc. Components: potentiometers, remote control key boards, etc. Commercial applications of industrial control devices. Ms(170) Se(1950) DAC RCMSa

Berkeley Division, Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif. / Landscape 6-7730  
 EASE computer (Electronic Analog Simulating Equipment) for solving equations, simulating systems, etc. Network of computing facilities over the country. Se Ac RMSa

Edmund C. Berkeley and Associates, 815 Washington St., Newtonville 60, Mass. / Decatur 2-5453 or 2-3928  
 Courses by mail in automatic computing machinery and other scientific subjects. Ss(3) Se(1948) Dc Ca Affiliated with Berkeley Enterprises, Inc.

Berkeley Enterprises, Inc., 513 Ave. of the Americas, New York 11, N. Y. / Algonquin 5-7177 / and 815 Washington St., Newtonville 60, Mass. / Decatur 2-5453 or 2-3928 / \*C  
 Small robots, robot show-stoppers, etc. Logical design, applications, marketing, etc. of automatic information handling machinery. Publisher of "Computers and Automation" and other publications. Ss(8) Se(1954) Dc RCMSa Affiliated with Edmund C. Berkeley & Associates.

Berkshire Laboratories, 732 Bank Village, Greenville, N. H. / Greenville 111 / \*C  
 Special computer components. Ss Se(1949) IAc RMCa

Bill Jack Scientific Instrument Co.-SEE under J Birkbeck College, University of London, 21 T orington Sq., London W.C. 1, England / Langham 1912 / \*C  
 Maker of ARC, APEXC, and SEC digital computers; electronic digital computers. Ss(10 to 20) Se(1946) Dc RCPa

Boeing Airplane Company, Industrial Products Division, Seattle 14, Wash. / Mohawk 4444 / \*C  
 Boeing Electronic Analog Computer. Associated non-linear equipment. Complete line of auxiliary equipment, including function generator and electronic multiplier. Ls(37,000) Le(1916) Ac RMSa

Borg-Warner Corporation, Bryon Jackson Division, Electronics Section, 492 East Union St., Pasadena 1, Calif. / Ryan 1-5166 / \*C  
 Pressure, temperature, and flow transducers to digital information; special purpose digital computers; pressure-temperature-flow digital computer; telemetering data reduction to digital form; frequency modulation transducer to digital form. Ms(300) Me (section, 1944; company, 1910) Dic RMSa

Bowmar Instrument Corp., 2415 Pennsylvania Street, Fort Wayne 4, Ind. / Anthony 1463 / \*C  
 Mechanical computer components. Ms(55) Se(1951) Ic RMSa

Bowser, Inc., 33 No. La Salle St., Chicago, Ill. Andover 3-4322 / and subsidiaries / \*C  
 Electrofile: electro-mechanical file card selectors. Xacto: computing liquid flow meters, mechanical. Xactronic: computing liquid flow meters, with electronic sensing. Blenders and proportioners for automation of liquid process plants; liquid controls; money-meter machines; many other products. Ls(4000) Le(1885) Ic RCMSa

Bradley Laboratories, Inc., 168 Columbus Avenue, New Haven, Conn. / Main 4-3123 / \*C  
 Selenium rectifier kits, high temperature rectifiers. Selenium diodes, copper oxide diodes, limiters, modulators. Ms(125) Me(1939) Ic RMSa

Richard D. Brew and Company, Inc., 90 Airport Rd., Concord, N. H. / Capitol 5-6606 / \*C  
 Distributed constant, lumped constant and ultrasonic delay lines. Ss(36) Me(1939) Ic RMSa

Harry P. Bridge Co., 1201 Chestnut St., Phila. 7, Pa. / Locust 8-0330 / \*C  
 Marketing, sales, sales promotion, advertising, merchandising, market research, etc., for all products in the computer field. Consultants; advertising agency. Ss(12) Me(1930) Ic RCPSa

The Bristol Co., Waterbury 20, Conn. / Plaza 6-4451 / \*C  
 Automatic recording, indicating, controlling and telemetering instruments, and components; Electronic recording potentiometers; instruments for automatic control and automation. ?s Le(1889) CIC RMSa

British Electronics Sales Co., Inc., P. O. Box 132, Oakland Gardens Station, New York 14, N.Y. / Murray Hill 2-5844 / \*C  
 Miniature resistors, glass-coated, carbon film; metallized glass fiber wound resistors

### Computers and Automation

with extreme stability; packaged tube clamps; miniature neon lamps and assemblies; miniature and printed circuit connectors; etc. Manufactured by leading British concerns. Ss Se(1950) Ic Sa

British Tabulating Machine Co., Ltd., 17 Park Lane, London W. 1, England / Hyde Park 8155 / \*C  
Punched card machines. Ls(4500) Le(1908)  
Dc RCPMSa

Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio / \*C  
Recording analyzers. Magnetic heads and drums. Decades. Tape transports. "Tape Drum", memory storage device. Computer components. Ls(1300) Le(1921) Ic RMSa

Bull S. A. Compagnie des Machines, 94 Avenue Gambetta, Paris 20e, France / MEN 8158 / \*C  
Punch card machines. Commercial electronic computers and card-programmed scientific computers. Producing about 10 electronic computers a month; 100 currently in operation. Ls(2500) Me(1931) Dc RMSa

Bureau of the Census, Washington 25, D.C. / \*C  
Tabulation of statistical data by special machines designed and built for own use, by commercial punch-card equipment, and by electronic computing system (the Univac). Ls(1100 in Machine Tabulation Division)  
Le(1890 in punch card field) Dc Ga

Burlingame Associates, 103 Lafayette St., New York 13, N.Y. / Digby 9-1240 / \*C  
Analog computers, servo analyzers, servo-control devices, digital voltmeters, etc. Ss(35) Me(1928) Alc CSA

Burroughs Corporation, 6071 Second Ave., Detroit, Mich. / Triangle 5-2260 / and elsewhere / \*C  
Automatic electronic digital computers, UDEC, El01. Adding machines, bookkeeping machines, etc. Electronic digital test computers, assembled from pulse control units. Fast access magnetic core memory. Pulse control components, servo-mechanisms, etc. This company owns Control Instrument Co. Ls(19,000) Le(1896) DSc RMSpa

Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia, Pa. / Locust 7-1401  
Electronic computing equipment: large automatic digital computer, UDEC; small automatic digital computer, El01. ?s ?e Dc MSa

Burroughs Corporation, Research Center, Paoli, Pa. / Paoli 3500 / \*C  
Computer research and development. Computing service: digital. Development of data handling equipment and systems for business, industry, government. Ls(1000) Se(1948) Dc RCPA

Business Electronics, Inc., Box 3330, Rincon Annex, San Francisco, Calif. /  
Home study courses in programming for computers. Education and training for business. Ss(6) Se(1955) Dc RCPa

Byron Jackson Division - SEE Borg-Warner Corporation

C

California Computer Products, 3927 West Jefferson Blvd., Los Angeles 16, Calif. /  
Digital point plotter (CCP 701) and other equipment. DAc RMSa

Cambridge Thermionic Corporation, 445 Concord Ave., Cambridge 38, Mass. / Trowbridge 6-2800 / \*C  
Components for computers. Ms(150) Me(1940)  
Ic RMSCa

Canning, Sisson and Associates, 914 South Robertson Blvd., Los Angeles 35, Calif. / Bradshaw 2-4904  
Design and installation of business systems. Consultants. Application of electronic computers and other automatic data-processing equipment. Publisher of "Data Processing Digest". Ss(6) Se(1954) DAc RCPa

Cannon Electric Company, 3209 Humboldt Street, Los Angeles 31, Calif. / Capitol 5-1251 / \*C  
Multiple circuit connectors for computers, etc. Ls(2200) Le(1915) Ic MSra

Carbide and Carbon Chemicals Company-AEC, Numerical Analysis Department, P. O. Box P, Oak Ridge, Tenn. / LD-220, X8671 / \*C  
Numerical analysis using digital computers. Sa(35) Se(1948) Dc RGA

CBS-Hytron, Division of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / Danvers 2360 / \*C  
Electron tubes and semiconductors for computer and other uses. Ls(6000) Le(1921) Ic Ma

Cinch Manufacturing Corp., 1026 S. Roman Avenue, Chicago 24, Ill. / - / \*C  
Components for computers: tube sockets, connectors, printed wiring boards, terminal boards, etc. Ls(1400) Le(1924) Ic RMSCa

Circuit Engineering, 66 Westland Rd., Weston 93, Mass. / - / \*C  
Consultants. Transistor, magnetic, electronic, conductive, and other information handling circuits. Ss Se(1954) Dc Ca

C.P. Clare & Co., 3101 Pratt Blvd., Chicago 45, Ill. / Ambassador 2-7700 / \*C  
Relays for computer and other uses. Ls(510) Me(1937) Ic RMSa

Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif. / Atlantic 7-6111 / \*C  
Adding and calculating machines, cash registers, electronic computers, analog-digital converters, input and output equipment for computers, data-reduction systems. Ls(1500) Me(1939) DAc RMSa

Coleman Engineering Co., 6040 West Jefferson Blvd., Los Angeles 16, Calif. / Vermont 9-7549 /  
Digital data handling systems and components; "Digitizer", device for converting rotational shaft positions into electrical contact settings; etc. Ms(100) Se(1951) Dic RMSa

Columbia Broadcasting System, Inc., -SEE CBS Hytron Division

Commercial Controls Corp., 1 Leighton Ave., Rochester 2, N. Y. / Culver 5800 / \*C  
"Flexowriter" automatic writing machines; "Justowriter" automatic tape-operated composing machines; auxiliary motorized tape punches, tape readers, tape verifiers, tape converters, tape transmitters, mailroom and office equipment. Ls Le Ic RMSa

Commonwealth Scientific and Industrial Organization, Radiophysics Division, Sydney, New South Wales, Australia /  
Maker of CSIRO Mark I electronic digital computer of Inst. for Advanced Study type. DAc RCGPa

### Roster of Organizations

Computer Company of America, Division of Bruno-New York Industries Corp., 140 Church St., New York 7, N.Y. / Cortlandt 7-1450 / \*C  
Analog computers, differential analyzers, specialized computers and accessories. Ms (125) Me(1942) DAC RMSa

Computer Control Co., Inc., 92 Broad St., Wellesley 57, Mass. / Wellesley 5-6620 and 10966 Le Conte Ave., Westwood, Calif. / \*C  
Special purpose digital computers and data-handling systems; solid delay line acoustic memory; "3C-PAC": universal, logical gating, packaged circuits; mathematical services. Operating and servicing Raydac at Pt. Mugu, Calif. Ss(75) Ss(1953) Dc RMSa

Computer Engineering Associates, Inc., 350 North Halstead St., Pasadena 8, Calif. / Computer components. Ic RMSa

Computing Devices of Canada Limited, P. O. Box 508, Ottawa, Ontario, Canada / Parkway 8-1761 / \*C  
Digital and analog computers; large and small scale data processing systems; automatic navigation systems; simulators; computer components. Research and development in instrumentation and automatic control. Digital and analog computing and data-processing service; NCR 102D digital computer installed, Reeves analog computer coming. Consulting services on business applications. Field maintenance service (six computers in the field now being maintained). Ms(430) Se(1948) DASCr RCPMSa

Computyper Corp. - SEE Friden Calculating Machine Co.

Consolidated Electrodynamics Corp., (formerly Consolidated Engineering Corp.), 300 North Sierra Madre Villa, Pasadena 8, Calif. / Ryan 1-8421 or Sycamore 6-0173 / \*C  
Digital and analog data-handling and conversion systems (Sadic, Millisadic, etc.). Automatic translator magnetic tape to punched card. Transducers, recording oscilloscopes magnetic tape equipment, data processing systems. Systems engineering. SEE ALSO their affiliate, Electrodata Corp. Ls(1550) Me (1937) Dc RMSa

Control Instrument Co., 67 35th St., Brooklyn 32, New York / Sterling 8-0658 / \*C  
Fire-control equipment. 900 line-a-minute tabulator. Digital and analog machines and components. Character recognition equipment. Subsidiary of Burroughs Corp. Ls(1200) Me (1934) DAC RMSa

Cook Research Laboratories, Division of Cook Electronic Co., 2700 Southport Ave., Chicago 14, Ill. (mail address), 8100 Monticello Ave., Skokie, Ill. (location) / Keystone 9-2060 and Orchard 3-9200 / \*C  
Magnetic data-recording systems; digital, analog, and hybrid information-processing systems - particularly for aircraft and airborne applications. Basic and industrial research in servomechanisms, air research, weather reconnaissance, guided missiles, etc. Ms (380) ? DACa RCA

Cornell-Dubilier Electric Corp., 333 Hamilton Blvd., S. Plainfield, N.J. / Plainfield 6-9000 / \*C  
Test equipment. Components, including capacitors, converters, printed circuits, etc. Ls Le(1910) Ic MSA

Cornell University, Computing Center, Rand Hall, Ithaca, N.Y. /

Computing service: digital; card programmed calculator, punch card machines. Dc RCPa

Coxhead Corp., Ralph C / 720 Frelinghuysen Ave., Newark 5, N.J. /

Type composing of display types by photography using a desk machine. Variotypers. Ls ?e Ic RMSa

Curta Calculator Co., 3851 West Madison St., Chicago 24, Ill. /

Eight-ounce, hand-powered, rotary "brief-case" calculator; adds, subtracts, multiplies, divides; totals to 15 decimal places; made in Lichtenstein. Ss(10) Se(1952) Dc Sa

Curtiss-Wright Corporation, Electronics Division, Carlstadt, N.J. / - / -

Electronic flight simulators used by commercial airlines for training flight crews. Other simulators; duplicators. Ls ?e AIC RMSa

### D

Daco Machine Co., Brooklyn, N.Y. / Ulster 5-8350  
Computing controls for machine tools. Cc RMSa

Data Processing Associates, Limited, 1313 Wellington St., Ottawa, Ont., Canada / Ottawa 8-6065  
Digital and analog computers, data reduction systems, data processing and data reduction services; research and development for scientific, commercial, industrial fields. Ss(6) Se(1954) DACMc RCPMSa

Datamatric Corporation, 151 Needham St., Newton Highlands 61, Mass. / Decatur 2-6960 / \*C  
Large high-speed electronic data-processing equipment. Magnetic core components; tape handling mechanisms; magnetic recording heads. Computing services, to analyze and process problems in operations research, applied mathematics, engineering, and general business accounting, using digital computers. (Owned by Minneapolis-Honeywell Regulator Co. and Raytheon; formerly the Computer Dept. of Raytheon). Ms(200) Se(1955) Dc RMSCPa

The Daven Company, 191 Central Ave., Newark 4, N.J. / Mitchell 2-6555 / \*C  
Precision resistors, rotary switches and attenuators. Ms(490) Me(1929) Ic RMSa

Davies Laboratories, Inc., 4705 Queensbury Road, Riverdale, Md. / Appleton 7-1133 / \*C  
Automatic data-reduction and conversion equipment. Magnetic tape data recorders. Magnetic recording and reproducing heads. Ms(110) Se(1946) Ac RMSa

The de Flore Co., 116 East 30 St., New York 16, N.Y. / Murray Hill 6-5730 / \*C  
Register controls, servomechanisms, control systems, mechanical design. Research and development. Synthetic training devices. Ss(25) Se(1948) DACIc RCPa

Dennison Manufacturing Co., Framingham, Mass. / Tr 3-3511 / \*C  
Development, production and sale of "Print-Punch" marking machine for automatic data processing. Ls(2700) Le(1844) Ic RMSa

Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / Spring 7-4016 / \*C  
Computing and consulting services. Analog computing center. Design of simulators, trainers and special-purpose computers. Associated with Mid-Century Instrumatic Corp. Ss Se(1955) Ac RCPa

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Computers and Automation

John Diebold and Associates, Inc., 40 Wall St., New York, N.Y. / Whitehall 3-9115 / \*C  
 Consulting management engineers, specializing in automation and computers. Ss Se DAICc RMCPa

Digital Control Systems, Inc. -- SEE Litton Industries

Doeleam Corp., a division of Minneapolis-Honeywell Regulator Co., 1400 Soldiers Field Rd., Boston 35, Mass. / Algonquin 4-5200 / \*C  
 Rate, free and integrating gyroscopes, D-C amplifiers and null indicators, synchros and servo motors. Ls(700) Me SIC RMSa

Donner Scientific Co., 2829 7th St., Berkeley 10, Calif. / Thornwall 5-3150 / \*C  
 Design and manufacture of complete analog computers, function multipliers, function generators, computing components, accessories, servomechanical transducers, electronic test equipment and control instrumentation. Design services in analog and digital computing instrumentation and applications. Ms (50) Se(1953) DASCc RMSCa

E

Eagle Signal Corp., 202 20th St., Moline, Ill. / Moline 2-5571 / \*C  
 Timers and counters for automatic control of machines and processes. Ls(510) Le(1920) Cc MSA

Eastern Industries, Inc. -- SEE Automatic Signal Division

Ebasco Services, Inc., 2 Rector St., New York 6, N.Y. / Digby 4-4400 / \*C  
 Management advisory services. Applications of data processing equipment in business; etc. Ls(1600) Le(1905) Dlc CPA

Eckert-Mauchly Division -- SEE Remington Rand Univac Division, Philadelphia

Eclipse-Pioneer Division -- SEE Bendix Aviation Corporation

Edgar, Wesley B., 206 Palmetto State Life Bldg., 1310 Lady St., Columbia 1, S.C. / Columbia 3-7563 / \*C  
 Consulting service on application of automated procedures to small business operations. Ss (4) Me (1930) Ic Ca

Thomas A. Edison, Inc., Instrument Division, 22 Lakeside Ave., West Orange, N.J. / Orange 3-6800 / \*C  
 Automatic control components, time delay relays. Thermal devices. Ms(360 in division; 4000 in company) Me(1940 division; 1888 company) Ic MSA

Eco Production Co., 827 South Vermont, Los Angeles, Calif. / Dunkirk 5-3026  
 Electronic components for computers and other equipment. Squaring circuits. Subsidiary of Electronic Engineering Co. of Calif. Ic RMSa

Electrical and Physical Instrument Corp., 42-19 27th St., Long Island City, N.Y. / Stillwell 4-6389 / \*C  
 Flip-flop and other counters in decade and binary; digitizers (high speed); automatic control machinery. Ss Se Dc RMCa

Electro Data Corporation (Consolidated Electrodynamics Corporation affiliate), 460 Sierra

Madre Villa, Pasadena 6, Calif. / Ryan 1-8193 / \*C

Datatron electronic data processing machines and digital computer components; Cardatron alpha-numeric card input-output system; magnetic tape units; punched card conversion equipment. Computing service: digital. Ms (325) Se(1950); parent company 1937) Dc RMSCpa

Electro-Mec Laboratory, Inc., 47-51 33rd St., Long Island City 1, N.Y. / Stillwell 6-3402 / \*C  
 Analog-to-digital converters; low torque potentiometers; etc. Ms(175) Se(1950) Ic RMSa

Electronic Associates, Inc., Long Branch, N.J. / Long Branch 6-1100 / \*C  
 General purpose precision analog computers, special purpose analog computers, analog computer components, digital-to-analog converter, digital plotting system (Dataplotter). Automatic control of all machine tools. Ms (360) Se(1945) DAc RMSa

Electronic Control Systems, Inc., 2136 Westwood Blvd., Los Angeles 25, Calif. / Granite 8-4266 and Bradshaw 2-0845 / \*C

Special purpose data-handling systems for military and industrial use; automatic continuity tester, statistical analyser, machine tool control systems. Ms(85) Se(1953) DAc RMSa

Electronic Computer Div. of Underwood Corp., 35-10 36th Ave., Long Island City 6, N.Y. / Exeter 2-3400 / \*C

Construction: two types of electronic digital computers (Elecom 120-A, 125); an electronic sorter-collator; and an electronic accounting machine, Elecom 50. Delay lines, decade delay lines, pulse transformers, magnetic recording heads, magnetic drums, D.C. plug-in amplifiers. Ms(200) Se(1949) Dc RMSa

Electronic Engineering Co., 180 South Alvarado St., Los Angeles 57, Calif. / Dunkirk 2-7353  
 Design, development, and fabrication of specialized electronic equipment. Analog computing machinery. Analog-to-digital-to-analog converters. Polar-to-rectangular-to-polar converters. Servomechanisms. Ms(180) Se(1947) DAc RMSa

Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass. / Trowbridge 6-9100 / \*C  
 Electronic and photoelectronic controls, "Photoswitches", etc. Automatic control and data processing machinery. See next entry Business Machines Div. Ls(1500) Me(1937) DAc RMSa

Electronics Corp. of America, Business Machines Div., 10 Potter St., Cambridge 42, Mass. / Trowbridge 6-8190 / \*C  
 Automatic inventory machines and point of sale recorders. "Magnefiles". Data processing and digital computing machinery. Digital computers for business use. Analog-digital converters. Automatic control instrumentation and systems. SEE also preceding entry for Electronics Corp. of America. Ls(1500 company) Me(1954, this division; 1937, company) DAc RMSa

Elliott Addressing Machine Co., 143 Albany Street, Cambridge 39, Mass. / Trowbridge 6-2020 / \*C

### Roster of Organizations

Addressing stencils, with selection controlled by punched holes in cardboard margin.  
Ls(1000) Se(1900) Ic RMSa

Elliott Bros. (London) Ltd., Century-Works, Lewisham, London, S.E. 13, England, and Computing Machine Division, Elstree Way, Borehamwood, Herts., England / Tideway 3232, Elstree 40 / \*C  
Servomechanisms; Elliott 402, 403 electronic digital computers. GPAC (General purpose analog computer). Computing services; components, instrumentation and control for process industries. Ls(3500) Le(1800) DASCC RMSCa

Engineering Research Associates -- SEE Remington Rand

Engineers Northwest, 2835 Nicollet Ave., Minneapolis 8, Minn. / Re-5541 / \*C  
Test-scoring machines and equipment. Ss(20) Se(1945) DAC RCMA

English Electric Co., Stafford, England. / \*C  
Manufacturers of fully engineered versions of ACE (see National Physical Laboratory). Ls Se DIC RMSa

Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / Commonwealth 6-3228 / \*C  
Magnetic shift registers, transistors, delay lines, and other components for computers, systems, automatic control, etc. Datrac reversible data reduction systems and translators: to digitize the output from an analog computer, and to "analog-ize" the input to an analog computer. Ms(100) Se(1954) DIC RMSCa

ESC Corp., 534 Bergen Blvd., Palisades Park, N.J. / Windsor 7-0400 / \*C  
Computer components: delay lines, pulse forming networks, pulse transformers, filters. Ms(100) Se(1948) Ic RMSa

E-Z Sort Systems, Ltd., 45 Second St., San Francisco 5, Calif. / Garfield 1-8005 / \*C  
Edge-punched cards for filing and sorting data. Special cards for correlation of facts Control systems for a number of electronic computers. Ms(260) Me(1935) Ic RMSa

### F

Fabrica Addizionatrice Italiana S.S., Viale Umbria 36, Milan, Italy  
Desk calculators to add, subtract, multiply, divide, print. Dc RMSa

Facit, Inc., 404 4th Ave., New York 36, N.Y. (subsidiary). Stockholm, Sweden (headquarters), and elsewhere / \*C  
Touch calculators; adding machines; Odhner adding machine with multiplying features; typewriters, etc. (In 1930 A.D., copper mining). Ls(4000) Le(1390 A.D.) Dc RMSa

Fairbanks Associates, 248 Greenwich Ave., Greenwich, Conn. / Greenwich 8-8155 \*C  
Consultants in application and installation of electronic systems in clerical methods and procedures; evaluation of proposed savings; operations research. Ss(7) Se(1952) DIC RCpa

Farrand Controls, Inc., 4401 Bronx Blvd., New York 70, N.Y. / Fairbanks 4-2210 / "Inductosyn" automatic control equipment. Subsidiary of Farrand Optical Co., which see.

Farrand Optical Co., Bronx Blvd. and 238 St., New York 70, N.Y. / Fairbanks 4-2200 / \*C  
Gunfire control apparatus, rangefinders, optical and electronic sighting equipment, automatic trackers, infrared search and scanning systems, analog-digital converters, analog computers, etc. Ls(800) Le(1918) DASCC RMSa

Federal Telephone and Radio Co., Division of Int'l Tel. and Tel., 100 Kingsley Rd., Clifton, N.J./ Nutley 2-3600 / \*C  
Vacuum tubes, selenium rectifiers, germanium diodes, contact protectors, coaxial cables, magnetic amplifiers; radio and telephone systems, microwave systems, and associated components. Ls(6500) Me(1941) ISCc RMSpa

Felt and Tarrant Mfg. Co., Comptometer Div., 1735 No. Paulina St., Chicago 22, Ill. / Brunswick 8-5000 / \*C  
Adding-calculating machines, key-driven, electric and non-electric. Comptometer. Electronic dictation-transcription machines. Ls(1700) Le(1886) Dc RMSa

Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N.Y. / Circle 7-0911 / agent for Ferranti Electric Ltd., Moston, England, and Mount Dennis, Toronto, Canada / \*C  
General purpose electronic digital computers (Pegasus, Mercury). Special purpose data processing systems. High speed tape readers. Magnetic drums. Numerical controls for machine tools. Ls(12,000) including associated companies) Le(1896) DACC RMSa

Ferranti Limited, Computer Centre, 21 Portland Pl., London W 1, England / Langham 9211  
Computer and information-handling laboratory. Ms(100) Se(1953) DACC RCpa

Ferroxcube Corporation of America, East Bridge St., Saugerties, N.Y. (a joint subsidiary of Sprague Electric Co. and Philips Industries) / Saugerties 1000 / \*C  
Ferrite core materials, including pot cores, cup cores, recording heads, and microminiature toroids with square hysteresis loop. Ms(150) Se(1950) Ic RMSa

Financial Publishing Co., Mathematical Tables Div 82 Brookline Ave., Boston 15, Mass. / \*C  
Computing service: digital; card programmed calculators, punch card. Ms(100) ?e Ic RCpa

Fisher and Porter Company, 330 Warminster Road, Hatboro, Pa. / Osborne 5-6000 / \*C  
Automatic instrumentation, including: measurement of a variable at the point of process; transmission of data, central collection, and display; data reduction systems using a mechanical digital converter (Digi-Coder), tabulated digital data output, etc. Automatic multiple readout systems, converters, computers. Ls(10,000) Me(1937) DACC RMSa

The de Florez Co. -- SEE under letter D

Ford Instrument Co., Div. of Sperry Rand Corporation, 31-10 Thomson Ave., Long Island City 1, N.Y. / Stillwell 4-9000 / \*C  
Gunfire control apparatus. Analog and digital computers; components; magnetic amplifiers; servos; differential and integrator elements; analog-to-digital converters. Automatic control systems involving computers.

Computers and Automation

Instruments for shipborne and airborne armament and navigational control. Computers, systems, drives, and precision components for industry and government. Ls(2500) Le(1915) ASCC RMPCa

The Foxboro Company, Foxboro, Mass. / Foxboro 312 / \*C

Industrial instrumentation and analog computers for measuring and controlling process variables. Ls(2000) Le(1908) ACc RMSa

Franklin Electronics, Inc., E. 4 St., Bridgeport, Pa. / Broadway 2-4800 / \*C

Analog-to-digital converters. Other products. Ms(50) Se(1951) Ic MSA

The Franklin Institute Laboratories for Research and Development, 20th St. & Benjamin Franklin Parkway, Philadelphia 3, Pa. / Locust 4-3600 / \*C

Computing service: analog; network analyzer, AC. Fire-control equipment. Special purpose analog computers, large and small scale. Digital computer components. Prototype construction. Ms(325) Se(1946) DAc Ra

Friden Calculating Machine Co., Inc., San Leandro, Calif. / Sweetwood 0700 / \*C

Desk calculating machines. Computyper. Add-Punch machine. Automatic typing-computing. Ls(2500) Me(1934) Dc RMSa

G

H. S. Gellman and Company, 199 College St., Toronto, Ontario, Canada / Walnut 3-4484 / \*C

Consultants in electronic computer applications; selection, installation and operation of computer systems; system analysis and synthesis; programming for digital computers. Complete computing and data processing service. Ss(6) Se(1955) Dc CPA

General Ceramics Corporation, Keasbey, N. J. (near Perth Amboy) / Valley 6-5100 / \*C

Magnetic cores and ferrites for computer components; toroidal ferrite cores as memory devices for computers; technical ceramics, insulators, etc. Ls(500) Le(1906) Ic RMSa

General Controls, 801 Allen Ave., Glendale 1, Calif. / Victoria 9-2181 / \*C

Automatic controls (pressure, temperature, level, flow). Ls(2000) Me(1930) Cc RMSa

General Cybernetics Corp., affiliate of The Angle Computer Co., Inc., 1751 No. Coronado St., Los Angeles 26, Calif. / Normandy 3-1300 / \*C

Linear motion transducer reporting 1/10,000 of an inch position change; high-speed converter of punched cards to tape; industrial automation, electronic gages for automation processes, etc. Successor of General Cybernetics Associates. Ss(18) Se(1953) DAIcC

RCMSa

General Electric Co., Schenectady, N. Y.

Computing service: analog; network analyzer AC and DC, differential analyzer; for anyone. Ic RCPa

General Electric Co., Tube Department, One River Road, Schenectady, N. Y., and elsewhere / Schenectady 4-2211, X1031 / \*C

Electronic tubes, including many specifically for computer purposes. Twin-triode, heptode, and thyratron types for counters, amplifiers, coincidence-gating, frequency-dividers, and core-drivers. Also, high reliability types

for airborne computers. Ls(15,000) Le(1878) Ic RMSPCa

General Electronics Laboratories, 18 Ames Street, Cambridge 42, Mass. / University 4-9730

Ms(60) Se(1950) DACc RMSa

General Kinetics, Inc., 555 23rd St. South, Arlington 2, Va. / Otis 4-7555 / \*C

Mathematical studies; numerical analysis; programming services for major general purpose computers; data reduction services; systems studies and evaluation including operations research; construction, modification, and repair of peripheral equipment and special components. Ss(9) Se(1955) Dc RCPa

General Precision Laboratory, 63 Bedford Road, Pleasantville, N. Y. / Pleasantville 2-2000 / \*C

Rapid electronic analysis of punch card data, etc. Ls(1200) Se(1945) Dc RMSa

General Research Co., 603 Jackson St., Falls Church, Va. / Je 4-7622

Consulting services: applications of data processing equipment; operation of computer installations. Ss Se Dc RCPa

Genisco, Inc., 2233 Federal Ave., W. Los Angeles, Calif. / Arizona 8-1276, Bradshaw 2-9749 / \*C

Computer components of electro-mechanical type, transducers, analog-to-digital converters, accelerometers, pressure transducers, x-y digital output film reader, components for automation and automatic control; etc. Ms(100) Se(1947) Ic RMSa

The Geotechnical Corporation, 3712 Haggard Drive, Dallas 9, Texas / Dixon 3946 / \*C

Special designs of digital and analog computers. Automatic chart readers. Other products. Ms(120) Me(1936) Ic RMSa

Georgia Institute of Technology, Rich Electronic Center, Engineering Experiment Station, Atlanta 13, Ga. / Atwood 6331 / \*C

Computing service: ERA 1101 computer and CRC 102D. Ss(16) Se(1955) Dc RCPa

The Gerber Scientific Instrument Co., 162 State St., Hartford, Conn. / Chapel 6-0539

Graphical-numerical computers. Relays, motors, plastics, metals. Ss Se(1948) Ic RMSa

Goodyear Aircraft Corp., Dept. 931, Akron 15, Ohio / Republic 3-6361 / \*C

Goodyear electronic differential analyzers. (GEDA line of analog computing equipment).

Ls Me Ac RMSa

Guardian Electric Manufacturing Company, 1621 W. Walnut St., Chicago 12, Ill. / Chesapeake 3-1100 / \*C

Components for computers, relays, solenoids, switches, stepping relays, hermetically sealed controls, complete control assemblies. Ls(850) Me(1932) Ic RMCA

Gudeman Co. of Calif., 9200 Exposition Blvd., Los Angeles 34, Calif. / Texas 0-7317

Delay lines, pulse transformers, filter networks. Ic RMSa

H

Haller, Raymond, and Brown, Inc., State College, Pa. / Ad 7-7611 / \*C

Electronic digital computer for solution of up to 1200 simultaneous equations, using magnetic drum and tape. Research and de-

**Poster of Organizations**

velopment on computer components, analog computers, electronic and electromechanical systems. Engineering analysis, operations research, electronic development. Ms(200) Se (1947) Dc Ra

Hamann Calculating Machine Co., 2118 Land Title Bldg., Philadelphia 10, Pa.  
Adding, subtracting, multiplying desk calculators. Dc MSa

Hammarlund Mfg. Co., Inc., 460 West 34 St., New York 1, N. Y. / Longacre 5-1300 / \*C  
Remote supervisory control and automatic control equipment. Ls(600) Le(1910) Icc MSa

Harvard University, Harvard Computation Laboratory, Cambridge 38, Mass. / \*C  
Builder of Harvard Mark I, II, III, IV calculators for Navy, Air Force, and own use. Computing service: digital; Harvard Mark I and IV machines. Ms Se Dc RCPMa

Hastings, Jr., Cecil, 136 Kuualia St., Lanikai, Hawaii / Kai 250274 / \*C  
Approximations for digital computers. Ss(2) Se(1954) Dc RCPa

Hathaway Instrument Co. (subsidiary of Hamilton Watch Co.), 1315 So. Clarkson St., Denver 10, Colo. / Spruce 7-2696 / \*C  
Transducers, analog and digital recorders, oscilloscopes, circuit analysis, etc. Ms(80) Me(1939) Ic RCMSa

Helipot Corporation, 916 Meridian Ave., So. Pasadena, Calif. / Py 1-2164 / \*C  
Precision potentiometers, single-and-multi-turn, linear and non-linear; turns-counting dials. Ls(600) Me(1943) Ic RMSa

Hillyer Instrument Co., 54 Lafayette St., New York 13, N. Y. / Digby 9-4485 / \*C  
Simulators, servomechanisms, sensing, computing, and actuating systems. Automatic machine controls. Ms(100) Se(1945) DAICc, RMSa

Hogan Laboratories, 155 Perry St., New York 14, N. Y. / Chelsea 2-7855 / \*C  
"Circle" computer. Digital high-speed printers. Facsimile and graphic recording. Ms(60) Me (1929) Dc RMSca

Hoover Electronics Co., (formerly Phebco, Inc.; now subsidiary of The Hoover Co.), 3640 Woodland Ave., Baltimore 15, Md. / Mohawk 4-2350  
Analog-to-digital converter. Digital computers. Ms(55) Se(1952) Dc RMSa

Hughes Research and Development Laboratories, Hughes Aircraft Co., Culver City, Calif. / Texas 0-7111 / \*C  
Automatic data-handling systems for commercial and military applications. Industrial control systems. Small, automatic electronic digital and analog computers for airborne use. Fire-control equipment. Aircraft control. Guided missiles. Ls(15,000 company; 4,000 Res. and Devt. Labs.; 400 computers) Me(1937) Dac RMSa

I

Imperial College, Mathematics Dept., Computer Section, Huxley Bldg., Exhibition Road, So. Kensington, London, England  
Automatic digital relay computer constructed and in operation; constructing a second computer with neon tube storage. Ss Le(1922) Dc RMa

Industrial Control Co., Wyandanch, L. I., N. Y. / Midland 3-7548  
Servo amplifiers, servo multipliers, dynamic analyzing tester, etc. Ic RMSa

Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus, Ohio / Hu 8-0671 / \*C  
"AccuRay" Process Control Systems, automated systems for the rubber, paper, steel, plastics, and tobacco industries. Ms(300) Se (1950) Ic RMSca

Institut Blaise Pascal, Laboratoire de Calcul Mécanique, 25, Avenue de la Division Le Clerc, Chatillon-sous-Bagnoles (Seine), France / \*C  
Constructing a digital calculator. Ss(9) Me(1939) Dc RPa

Institute for Advanced Study, Electronic Computer Project, Princeton, N. J. / \*C  
High speed general purpose (scientific) digital computers for own use. Ss(35) Se(1946) Dc RPa

Intelligent Machines Research Corp., 1101 Lee Highway, Arlington, Va. / Jackson 5-6400 / \*C  
Devices for reading characters on paper, etc. Pattern interpretation equipment. Sensing mechanisms. Digital computer elements. Ss (28) Se(1951) Dc RCMSa

International Business Machines Corp., 590 Madison Ave., New York 22, N. Y. / Plaza 3-1900 / and elsewhere / \*C  
Punch card machines. IBM 650, Magnetic Drum Calculator. IBM Electronic Data Processing Machines; IBM 704 and 705 (magnetic tape, magnetic drum, magnetic core storage, etc.) Card Programmed Calculator. Electronic calculating punch IBM 604 and 607. Data processing equipment. Automatic Source Recording Equipment. Computing service: digital; IBM 701, 702, 605, 604, etc. Card programmed calculator, punch card machines; over 115 IBM Service Bureaus all over country plus 4 electronic data processing centers. Ls (42,000) Le(1911) Dc RMSa

International Rectifier Corp., 1521 East Grand Ave., El Segundo, Calif. / Oregon 8-6281 / \*C  
Manufacturer of germanium diodes, selenium diodes, selenium photocells, selenium rectifiers. Ms(390) Se(1947) Ic RMSa

International Resistance Co., 401 North Broad St., Philadelphia 8, Pa. / Walnut 2-2166 / \*C  
Fixed and variable resistors, rectifiers, chokes, molded printed electronic circuits. Ls(2200) Me(1924) Ic RMSa

International Telemeter Corp., 2000 Stoner Ave., Los Angeles 25, Calif. / Arizona 8-7751 / \*C  
Systems and devices for clerical and control applications. Automatic document handling machinery. High-density photographic information storage. Community TV system equipment; pay-as-you-see TV. SEE also Telemeter Magnetics and Electronics Corp. Ms(200) Se (1951) DCc RMSa

International Telephone and Telegraph Corp., 67 Broad St., New York 4, N. Y. / Bowling Green 9-3800 / \*C  
Equipment for automatic control of repetitive processes, clerical or industrial work, such as inventories. Fully automatic pneumatic tube system, by dialing. Ls(96,000) Le DASCMc RNSCPa

## Computers and Automation

### J

Bill Jack Scientific Instrument Co., 143 Cedro s Ave., Solana Beach, Calif. / Skyline 5-1551 / \*C Airborne analog computers for "Recon" systems, aerial cameras; recording cameras; etc. Ms (450) Se(1949) Dlc RMSa

Byron Jackson Division -- SEE Borg-Warner Corporation

Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda 14, Md. / \*C

High-speed small, compact digital computers (Jaincomp A,B,Bl,B2,C). Pulse transformers, delay lines, magnetic storage systems. Pulse generators, test equipment. Input and output devices. Complete instrument systems. Ss (30?) Se(1948) DASc RMSa

Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena 3, Calif. / \*C

Analog, digital, and data-handling systems. Research and development in jet propulsion and missile guidance. Ls(1,200; about 50 on computers) Me(1942) DAc RCPa

### K

K C S Data Control, Ltd., Box 38, Postal Station J, 740 Bay St., Toronto 6, Ont., Canada / \*C Consulting, engineering, and programming in the digital computer field. Ss(3) Se(1954) Dc RCPa

Kaiser Metal Products, Inc., Briston, Pa. / Stillwell 8-3361 / \*C

Digital delay generators for accurate measurement and generation of time intervals, etc. Automatic electronic controls for industrial applications. Ls(3,500) Le(1920) Ic RMSa

Kearfott Co., Inc., Clifton, N. J. / Gregory 2-1000 / \*C

Analog-digital converter; digital-analog converter; servo motors, synchros, resolvers, integrating tachometer generators; analog and digital computers. Ls(3000) Le(1916) ISc RMSa

Ketay Manufacturing Co. -- SEE Norden-Ketay Corp. A. Kimball Co., 307 West Broadway, New York 13, N. Y. / Canal 6-2300 / \*C

Machine for printing and punching garment tags and specific type tickets. Input mechanisms. Ms(200) Le(1876) Ic RMSpa

The Kybernetes Corp., Division of Self-Winding Clock Co., 9 East 40 St., New York 16, N. Y. / Murray Hill 3-6030 / \*C

Automatic logging and digital printout and digital indicator systems. High and low speed electronic scanning systems; mechanical scanning systems; annunciators. Ms(150) Le(1885, parent company) ISc RMSa

### L

Laboratory for Electronics, 75 Pitts St., Boston 14, Mass. / Richmond 2-3200 / \*C

Analog computers. Digital computers (TIM and DIANA). Special computers to suit customer requirements; delay lines (mercury, quartz); plug-in packages for computer applications;

high density magnetic drum storage, etc. Ls (800) Se(1946) DAc RMSa

Lanston Monotype Machine Co., Barrett Adding Machine Div., 24th & Locust Sts., Phila. 3, Pa. / Locust 7-4614 / \*C

Adding, subtracting, and printing desk calculators. Ms(330) Le(1892) Dc MSA

Leeds and Northrup, 4901 Stenton Ave., Phila. 44, Pa. / Michigan 4-4900 / \*C

Automatic recorders and controls. Analog computers for closed-loop control of power company networks: one such computer controls power flow over a four-state area. Ls(3000) Le(1899) Cc RMSa

Librascope, Inc., 808 Western Ave., Glendale 1, Calif. / Chapman 5-2677 / \*C

Mechanical, electrical and electronic computers. Computing and controlling equipment for military applications and for banks, department stores, inventory and production control, etc. Airborne digital computers. LGP-30: low-price, large capacity, general purpose digital computer. All phases of data-handling Ls(1500; approximately 350 on digital computers) Me(1937) DASc RMSa

Librascope, Inc., Burbank Div., 133 E. Santa Anita Ave., Burbank, Calif. / Th 5-1785 or Vi 9-1351 / \*C

Magnetic "decision" elements; general purpose computer; reading-recording magnetic heads; converters; magnetic tape demagnetizers, etc. Formerly Minnesota Electronics Corp. Ms(55) Se(1946) Dlc RMSa

Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. / University 4-9370 / \*C

Analog digital converter, "Automatic Digital Recorder of Analog Data" (ADRAD). Conversion and input devices. Consultation concerning electronic equipment requirements for handling data; mathematical analysis and programming for digital computers. Ls(800) Le(1886) Ic Rca

Litton Industries, 336 N. Foothill Road, Beverly Hills, Calif. / Cr 4-7411; Br 2-0661 / \*C

Purchaser of Digital Control Systems, Inc. Radar systems with monopulse techniques; countermeasures, inertial navigation, automatic flight control, telemetering devices, communications equipment, instrumentation and test equipment, servomechanisms. New digital differential analyzer. Ls(1100) Se(1953) DAIC RMSa

Log Abax S.A., 146, Champs Elysees, Paris 8, France / Elysees 61-24 / \*C

Collaborating with Institut Blaise Pascal on computing devices. 198-register automatic accounting machine. Analysis of punched tapes and connection with punch card or calculating machines. Ms(700) Se(1949) Dc RMSa

Logistics Research, Inc., 141 So. Pacific Avenue, Redondo Beach, Calif. / Oregon 8-7108 / \*C

General purpose digital computers and computing systems (ALWAC). Punched card converters, magnetic tape auxiliary storage. Data-reduction and data-handling systems, input and output equipment; automatic graph-plotters; magnetic heads; automatic curve followers. Ms(112) Se(1952) Dlc RMSa

**Roster of Organizations.**

**M**

**W. S. Macdonald & Co.**--SEE Electronics Corporation of America, Business Machines Division  
Machine Statistics Co., 27 Thames St., New York 6,  
N. Y. / Cortlandt 7-3165

Computing service: IBM 604, punch card machines,  
IBM 650 expected. Ss(35) Se(1951) Dc CPA  
Magnetics, Inc., Box 230, Butler, Pa. / Butler 7-1745 / \*C

Tape wound cores of ultra-thin high-permeability materials, for computers, etc. Ms (275) Se(1949) Ic RMSa

**Magnetics Research, Inc.**, 142 King St., Chappaqua, N. Y. / Chappaqua 1-0052 / \*C

Magnetic components for analog and digital systems and computers; miniature magnetic shift registers; etc. Ss(15) Se(1952) DAIC RCMSa

**Marchant Calculators, Inc.**, Oakland 8, Calif. / \*C

Automatic electric calculators (desk type). Marchant-Raytheon Binary-Octal Calculator (desk type). Marchant "Miniac" electronic digital computer. Computer components. Data processing equipment. (See also Marchant Research, Inc.) Ls(2500) Le(1910) Dc RMSa

**Marchant Research, Inc.**, 1475 Powell St., Oakland 8, Calif. (Subsidiary of Marchant Calculators, Inc.) / Olympic 2-6500 / \*C

Electronic digital computers (including Miniac). Magnetic storage systems, magnetic heads, data processing equipment including input-output devices; computer components. Ss(55) this division) Se(1950) this division) Dc RMSca

**Massachusetts Institute of Technology, Digital Computer Laboratory**, 211 Mass. Ave., Cambridge 39, Mass. / University 4-6900

"Whirlwind" electronic digital computer. Ms (300+) Me(1945) DAc RCPa

**Massachusetts Institute of Technology, Office of Statistical Services**, Cambridge 39, Mass. / University 4-6900

Computing service: digital; IBM 604, card programmed calculator, punch card machines. Ss Se Dic RCPa

**Mathematisch Centrum**, 2e Boerhaavesstraat 49, Amsterdam, Netherlands / \*C

Relay computer in use; electronic computer under construction. Ms(60) Se(1946) Dc RCPa

**The W. L. Maxson Corp.**, 475 Tenth Ave., New York, N. Y. / Longacre 5-1900 / and elsewhere

Servomechanisms, analog computers, and digital computers for fire control, navigation, etc. Automatic control machinery. Ls(3000) Me(1935) DASc RMSa

**Mellon Institute of Industrial Research**, Multiple Fellowship on Computer Components, University of Pittsburgh, Pittsburgh 13, Pa. / Ma 1-1100 X375 / \*C

High temperature printed circuit components; electro-optical storage devices. Ss(5) Se (1950) Dc RCPa

**Mico Instrument Company**, 80 Trowbridge St., Cambridge 38, Mass. / Kirkland 7-8660 / \*C

Toroid transformers, toroid inductors; ferrite core units for computers, etc. Ss(20) Me(1934) Ic MSA

**Mid-Century Instrumatic Corp.**, 611 Broadway, New York 12, N. Y. / Spring 7-4016 / \*C

Analog computers; six-channel recorders; electronic function generators; diode func-

tion generators; electronic multipliers; electronic recorders. Ms(50) Se(1950) Ac RMSca

**William Miller Instruments, Inc.**, 325 No. Halstead Ave., Pasadena 8, Calif.

Milac analog computer. Electronic instruments for precision testing and measurement. Ac RMSa

**Minneapolis-Honeywell Regulator Co.**, Industrial Division, 4580 Wayne Ave., Philadelphia 44, Pa. Michigan 4-8300 / \*C

Automatic controllers. Brown Instruments. Servo components used in computers. Recording and indicating instruments and control equipment, etc. Amplifiers, converters, balancing motors, potentiometers, etc. Ls (3200) Le(1859) Ac RMSa

**Minneapolis-Honeywell Regulator Co.**--SEE also Data-matic Corp. and Doelcam

**Minnesota Electronics Corp.**--SEE Librascope, Inc., Burbank Div.

**Monrobot Corp.**, Morris Plains, N. J. / Morristown 4-7200 / \*C

Automatic electronic digital computers, data processing machines, and components. Magnetic drum storage systems. Tape punch equipment. Subsidiary of Monroe Calculating Machine Co. Ms(100) Se(1949) Dc RMSa

**Monroe Calculating Machine Company**, Orange, N. J. / Orange 3-6600 / and elsewhere / \*C

Desk calculating machinery for adding, calculating, and bookkeeping. See also Monrobot Corp. Ls(4550) Le(1911) Dc RMSa

**Moore School of Electrical Engineering**, Univ. of Pennsylvania, 200 South 33 St., Phila. 4, Pa.

Computing service: analog, digital; differential analyzer, card programmed calculator, punch-card machines. Ms(80) Le(1923) DAc RCPa

**F. L. Moseley Co.**, 409 North Fair Oaks, Pasadena, Calif. / Ryan 1-8998 / \*C

Two-coordinate X-Y recorder, point plotter, digital voltmeters, curve follower, etc. Ss (45) Se(1951) Ic MSA

**Mountain Systems, Inc.**, 864 Franklin Ave., Thornwood, N. Y. / Pleasantville 2-3330 / \*C

Electronic data processing systems (Modac); special purpose digital computing systems for business and scientific applications, magnetic drums. Ss(16) Se Dc RMSca

**N**

**National Bureau of Standards, Applied Mathematics Division**, Washington 25, D. C. / Emerson 2-4040 / \*C

Computing service; Seac, Dyseac, and punch card machines; for government and government contractors only. Ms(50) Se(1947) Dic RCPa

**National Bureau of Standards, Data Processing Systems Division**, Washington 25, D. C. / Emerson 2-4040

Digital and analog computers, data processing and control systems, input-output devices storage elements, transistors, diodes, delay lines, etc. Designed, assembled, and maintained Seac; designed and assembled Dyseac; designed several special purpose machines. Ms(80) Se(1946) DAc RMBGa

### Computers and Automation

National Bureau of Standards, Institute for Numerical Analysis—SEE University of California at Los Angeles, Department of Mathematics, Numerical Analysis Research

The National Cash Register Co., South Main and K Sts., Dayton 9, Ohio / Adams 6-1111 and Hawthorne, Calif. / \*C

Digital computers, data processing machines, input-output devices, computing systems. CRC 102-A and 102-D general purpose computers and other computers. Ls(13,000 at Dayton) Le (1884) Dc RCMSa

National Co., Inc., 61 Sherman St., Malden, Mass. / Malden 2-7954

Communications receivers; some computing equipment. Ls(700) 2e Ic RMSa

National Union Electric Corp., 350 Scotland Road, Orange, N. J. / Orange 2-6600 / \*C

Electron tubes, semi-conductor diodes, and transistors for computers, etc. Ms(150) Me (1929) Ic RMa

National Physical Laboratory, Control Mechanisms and Electronics Division, Teddington, Middlesex, England / \*C

Digital computers, electronic simulators, data recording. Designer and builder of the Pilot Model of ACE (Automatic Computing Engine). Collaborates with English Electric Co. Ls (1000; this division, 40) Le(1900) Dc RCPMa

National Physical Laboratory, Mathematics Division, Teddington, Middlesex, England / Molesey 1380 / \*C

Computing service formerly using Pilot Model of ACE, now using DEUCE; also differential analyzer. Analog, digital, punch card. Unrestricted. DAc RCPa

The Newton Co., 55 Elm St., Manchester, Conn. / Mitchell 3-5104 / \*C

Data processing equipment. Analog to digital converters; simulators; automatic typewriters. Ms(150) Se(1947) Dic RMSa

Norden-Ketay Corporation, 99 Park Ave., New York 16, N. Y. / Murray Hill 7-0498 / and elsewhere / \*C

Automatic control systems, analog computers, fire control systems, bomb sights, navigational systems, potentiometers, analog-digital converters, synchros, servo motors, resolvers, servo amplifiers, resolver amplifiers, airborne instruments. Ls(2400) Se(1955) DASCo RMSa

North American Aviation, Inc., 12214 Lakewood Blvd., Downey, Calif. / Logan 5-8651 / \*C

General purpose computers, differential analyzers. Special purpose analog computers for algebraic and differential equations. Ls (1200 in computer work) Se(1946) DAc RMSa

North American Philips Co., Inc., Research & Control Instruments Div., 750 So. Fulton Ave., Mt. Vernon, N. Y. / Mount Vernon 4-4500 / \*C

Analog computers. Ratemeters. Semi-automatic X-ray machine that determines percent of 12 different elements in a specimen, etc. Ms(250) Se(1942) AIC RMSa

Northrop Aircraft Co., Hawthorne, Calif. / \*C

Computing center; develops, maintains, operates own computing equipment. Computing service: analog, digital. Digital plotter, Data reduction and analysis. Development of computing systems on order. Ms(70 this project) Se(1950 this project) DAc RCPa

Notifier Manufacturing Co., 239 South 11th St., Lincoln 8, Nebraska / Lincoln 5-2946 / \*C

Automatic control machinery for fire alarms. Automatic control circuits, computer circuits, switching circuits. Automatic coding and decoding. Memory and pulse storing devices, transistor devices. Two small laboratory type computers under development. Ss(30) Se(1949) CIC RMSa

Nuclear Development Corporation of America, 5 New St., White Plains, N. Y. / White Plains 8-5800 / \*C

Selection, design, and building of special purpose data-handling systems. Programming. Operate own "Datatron" providing computing services. Also work with machine builders on automatic control machinery and automatic materials handling machinery. Ms(178) Se (1948) DCMc RMSa

Nuclear Science and Engineering Corp.—Subsidiary of Norden-Ketay Corporation, which see.

Numerical Analysis Research—SEE University of California at Los Angeles

### O

Olivetti Corp. of America, 580 Fifth Ave., New York 36, N. Y. / Judson 2-0637 / and Ing. C. Olivetti & Co., S.P.A., Ivrea, Italy / \*C

Desk adding, calculating, and printing machines. Fully automatic printing calculators. Ls(6000) Le(1908) Dc RMSa

Ortho Filter Corp., 196 Albion Ave., Paterson 2, N. J. / Mulberry 4-5858 / \*C

Pluggable units for computers, cathode ray amplifiers, power supplies, wiring of complete racks, toroids, etc. Ms(43) Se(1946) Ic RMSa

John Oster Mfg. Co., Avionic Div., Racine, Wis. / Fast response magnetic resolvers, etc. Ac RMSa

### P

Panellit, Inc., 7401 No. Hamlin Ave., Skokie, Ill. / Orchard 5-2500 / \*C

Equipment for automatic control; coordinated and graphic control panels for process variables; multiple-point scanning systems, annunciator systems. Ms(375) Se ISCMc RCMSPa

Pennsylvania State University, X-ray and Crystal Structure Lab., Dept. of Physics, University Park, Pa. / Adams 8-4841 X2125 / \*C

X-RAC computer for crystal electron density functions. S-FAC for structure factor calculations. Ms(55) Se(1946) DAc RPa

Phebco, Inc.—SEE Hoover Electronics Co.

George A. Philbrick Researches, Inc., 230 Congress St., Boston 10, Mass. / Liberty 2-5464 / \*C

Philbrick electronic analog computing equipment and components. Computing service: analog; Philbrick equipment. Ss(5) Se (1946) Ac RCMSa

Philco Corp., Government and Industrial Div., Wissahickon and Abbotsford Road, Phila. 44, Pa. / Tennessee 9-4000

Transac (transistor automatic digital computing system). Transac "match control".

### Poster of Organizations

Transistors. Other products. Ls (whole company, 23,000) Le(1892) RMSa DIC RMSa

Philco Corp., Lansdale Tube Co. Div., Lansdale, Pa. / Lansdale 5-4681 / \*C

Transistors, diodes, tubes for computers. Ls (2000) Se(1946) Ic RMSa

Phillips Control Corp., Joliet, Ill. / Joliet 3-3431 / \*C

Relays for computers, etc. Ms(350) Se(1946) Ic RMSa

Photon, Inc., 58 Charles St., Cambridge 38, Mass. / Trowbridge 6-1177 / \*C

Machinery for composing type by photographs. First photographically-composed book has been published. Ms(100) Me(1940) DIC RCMSa

Pi-Square Engineering Co., Inc., 230 Congress St., Boston 10, Mass. / Hubbard 2-3225 / \*C

Analysis and solution of engineering problems. Computing services. Analog computing equipment available. Ss Se(1954) ASCc RCPa

Pitney-Bowes, Inc., Stamford, Conn. / \*C

Postage meters. Tax-stamping meters. "Tick-ometer" counting and/or imprinting machines. Ls(3000) Le(1918) Ic MSA

Potter and Brumfield Mfg. Co., Inc., Princeton, Indiana / 1596 / \*C

Electric relays and stepping switches for computers, etc. Ls(1000+) Me(1932) Ic RMSa

Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y. / Great Neck 2-9532 / \*C

Electronic counters. Magnetic and perforated paper tape handlers; digital printer. Shift registers. Magnetic core memory. Random access memory. High-speed printer ("Flying Typewriter"): 6½ lines of characters printed per second. Analog-to-digital converter. Ms(115) Me(1942) DIC RMSa

Powers-Samas Accounting Machines, Ltd., England / Punch card tabulating equipment using small, medium, and standard cards. Agency is Underwood Corp., which SEE. Ls(6000) Le(1916) DIC RMSa

Price Waterhouse & Co., Management Advisory Services, 56 Pine St., New York 5, N. Y. / White-hall 3-5900

Applications of systems and equipment to data processing in business, etc. Ls Le(1895) DIC RCPa

Productions Electroniques, 8, rue Laugier, Paris 17, France

Collaborating with Institut Blaise Pascal on magnetic recording devices. Ic RMSa

Purdue University, Statistical Laboratory, West Lafayette, Indiana / Lafayette 92-2542 / \*C

Computing service: digital; Datatron digital computer; punch card machines. Ss(15) Se(1951) DIC RCPa

R

Radio Corporation of America, RCA Victor Division, Camden, N. J.

Digital computers and data processing systems for business applications. BIZMAC. Ls Le DIC RMSa

Radio Corporation of America, Tube Division, 415 South 5th St., Harrison, N. J. / Humboldt 5-3900 / \*C

Tubes, Transistors for computers. Ls Le Ic RMSa

Radio Development & Research Corp. (Germanium Products, a subsidiary), 26 Cornelison Avenue, Jersey City, N. J. / Rector 2-2337 (New York City) / \*C

Transistors, diodes, rectifiers, for computers. Ms(100) Me(1938) Ic RMSCa

The Ramo-Wooldridge Corp., Computer Systems Division, 5740 Arbor Vitae, Los Angeles 45, Calif. / Oregon 8-0311 / \*C

Airborne digital computer systems and data processing systems. Ls(1,000) Se(1953) DIC RMSca

The Rand Corporation, 1700 Main St., Santa Monica, Calif. / and in Lexington, Mass. (digital computer programming group) / \*C

Large digital computers for scientific and business uses; analog computers for scientific computations. Ls(1,000) Se(1946) DAIC RPGa

Raymond Rosen Engineering Products, Inc., 32 Walnut St., Philadelphia 4, Pa. / Evergreen 2-5015 / \*C

Computers used as end item in information transmittal systems, telemetering systems. Ms(365) Me(1943) Ic RMA

Raytheon Manufacturing Co., Waltham, Mass. / Twinbrook 3-5860 / \*C

Radar, sonar, communications, fire control, microwave and telemetering equipment, power tubes, electro-hydraulic servo controls, automatic machine-tool duplicators. Computer work transferred to Datomatic Corporation, which see. Ls(20,000) Le(1925) DAC RMSa

Raytheon Manufacturing Co., Division: Receiving and Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass. / Bigelow 4-7500 / \*C

Semiconductor diodes, transistors, and electron tubes, for computers. Ls Le(1923) Ic RMSa

J. B. Rea Co., 1723 Cloverfield Blvd., Santa Monica, Calif. / Exbrook 3-7201 / \*C

Analog-to-digital converters, miniature motors and gyroscopes, automatic control systems, general and special purpose digital computers, flight control systems for helicopters, automatic cruise control for aircraft, torpedo tracking systems, automatic data handling systems, aerodynamic systems analysis, simulation, nonlinear servo systems. Magnetic drums, magnetic heads, etc. Computing service: analog, digital, simulation; Electronic Associates' analog computer, Rea-Converter, READIX, general purpose digital computer. Ms(80) Se(1951) DASCC RMSca

Reeves Instrument Corp., 215 East 91 St., New York 28, N. Y. / Trafalgar 6-6000

Fire-control equipment. "REAC" electronic analog computers; servo mechanisms; 6 channel recorders; computers for simulation, automation and control. Computing service: analog; Reac. Ls Me Ac RMSa

Remington Rand Univac Division of Sperry Rand Corporation, 315 4th Ave., New York 10, N. Y. / Spring 7-8000 / and elsewhere. / \*C

Digital computers (Univac System, Univac Scientific, Univac File-Computer, Univac 120 and Univac 60 Punched-Card Electronic Computers). Analog computers; special purpose computers. Converters: card to tape, tape to card, punched paper tape to magnetic tape, and magnetic tape to punched paper tape. High speed printers, servomechanisms,

### Computers and Automation

magnetic drum storage systems, input and output devices. Punched-card tabulating equipment. Business and scientific computing services. Ls(8000) Le DIC RCPa

Remington Rand Univac Division of Sperry Rand Corporation, Univac Computing Center, 315 4th Ave., New York 10, N.Y. / Spring 7-8000

Computing service; digital; Univac, punched-card equipment, etc. Ms Se(1954) Dc RCPa

Remington Rand Univac Division of Sperry Rand Corporation (formerly Eckert-Mauchly Division), 2300 W. Allegheny Ave., Philadelphia, Pa. / Baldwin 3-7300 / \*C

All purpose digital computers. Univac Electronic System. Ls(600) Se(1946) Dc RCMa

Remington Rand Division of Sperry Rand Corporation, Engineering Research Associates Division, 1902 W. Minnehaha Ave., St. Paul, Minn. / Nestor 9601 / \*C

Development of digital computers, automatic data-handling and control systems, mechanisms, and weapons. Pulse circuits, magnetic cores, magnetic drums, transistors, printed wiring, miniaturization, and precise mechanisms used in the design of these systems. Automatic digital computers ERA 1101, 1102, 1103; Speed Tally; CAA Flight Plan Storage Systems; the Logistics Computers. Ls(1050) Se(1946) Dc RMCPa

Remington Rand Division of Sperry Rand Corporation, Engineering Research Associates Division, 510 18th St. S., Arlington, Va.

Computing service: digital; ERA 1103 type. Ls Se(1946) Dc RCPa

Rensselaer Polytechnic Institute, Computer Laboratory, 110 8th St., Troy, N.Y. / Ashley 2-3000, X240 / \*C

Computing service: analog; Reac, precision magnetic tape recorders for analog computing applications. Ss(8) Se(1952) Ac RCPa

Resistance Products Company, 914 S. 13th St., Harrisburg, Pa. / CE 6-9006 / \*C

Resistors -- high voltage, high resistance, standard types, encapsulated, hermetically sealed, subminiature, etc., for computer and other uses. ?s ?e Ic RMSa

Rich Electronic Computer Center -- SEE Georgia Institute of Technology

Richardson Camera Company, Inc., 171 W. Magnolia Blvd., Burbank, Calif. / Thornwall 2-0234 / \*C

Theodolite cameras, pulse-data cameras, film readers, film assessors, electronic counters. Ss(18) Me(1934) Ic RMSa

Robotyper Corporation, 125 Allen St., Hendersonville, N.C. / Hendersonville 4246

Automatic typing equipment that can be associated with any electric typewriter, using a record roll pneumatically operated. Ic RMSa

Rutherford Electronics Company, 3707 S. Robertson Blvd., Culver City, Calif. / Texas 0-4362 / \*C

Pulse instruments, time measuring systems, time delay generators. Ss(15) Se(1950) Ic RMSa

S

Saunders & Co., 66 Westland Rd., Weston 93, Mass. / \*C

Digital computing machinery; information-

handling devices; related devices. Ss Se Ic Sa

Scientific Computing Service, 23 Bedford Square, London W.C.1, England / Museum 0808 / \*C

Problem solving, consulting. Computing service: digital. Ss(15) Me(1937) Dic RCPa

Servo Corporation of America, 2020 Jericho Turnpike, New Hyde Park, N.Y. / Fieldstone 7-2180 / \*C

Servomechanisms. Automatic controls. Analysis and synthesis for controls manufacturers. Temperature controls by infra-red radiation. Industrial controls. Servo components and test equipment. Analog and digital computers. Ms(350) Se(1946) DASc RMSa

Servomechanisms, Inc., Post & Stewart Ave., Westbury, L.I., N.Y. / Edgewood 4-2700 / also 12500 Aviation Blvd., Hawthorne, Calif. / Osborne 5-7111 / \*C

Automatic electronic and electro-mechanical control systems and components, analog computers, instrumentation. Airborne digital computers, digital transducers. Ls(800) Se(1946) ASICc RMSa

Shallcross Mfg. Company, Jackson & Pusey Avenues, Collingdale, Pa. / Farragut 9-5100 / \*C

Wirewound resistors, switches, delay lines, for computer and other uses. Ms(300) Me(1929) Ic RMSa

Shepard Laboratories, Summit, N.J.

High-speed typer (up to 1800 characters per second). Ss Se(1950) Dic RMSa

Societe d'Electronique et d'Automatisme, 138 Blvd de Verdun, Courbevoie, Seine, France / Defense 41-20 / \*C

Analog and digital computers and components. Servomechanisms; electronic equipment for machine tools; electronic recorders. Analog computer ONE-L2. General purpose digital computer CAB 2.022. Ms(320) Se(1948) DASc RMSa

Societe des Servomechanismes Electroniques, 1 rue Chanez, Paris 16e, France

Sc RMSa

Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill. / Bishop 2-1414 / \*C

Constant voltage transformers, DC power supplies, etc., for computer and other uses. Ms(250) Me(1930) Ic RMSa

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. / Fireside 8-5311 / \*C

Computer power supplies. Ms(300) Me(1943) Ic RMSa

Soroban Engineering, Inc., Box 117, Melbourne, Fla. Electronic digital computers of the FLAC and SEAC type; computer auxiliary equipment such as high-speed paper tape perforators (240 characters per second), coded automatic keyboards. Devices for converting electric typewriters to control by punched paper tape. Paper tape readers; computer "do-it-yourself" kits; automatic format tabulators and report-writing machines; computer consulting services; etc. Ss Se(1953) Dc RMSa

Southern Electronics Corporation, 239 West Orange Grove Ave., Burbank, Calif. / Victoria 9-3193 / \*C

Precision polystyrene capacitors. Ss(55) Se(1951) Ic RMSa

Southwestern Computing Service, 910 South Boston

### Roster of Organizations

Tulsa 3, Oklahoma / Gibson 7-8146 / \*C  
 Computing service, solving data reduction and engineering and business problems. Ss(9) Se(1953) Ic RCPa

Specialties, Inc., Syosset, N.Y., and Charlottesville, Va. / Syosset, Walnut 1-2345; Charlottesville, 3-5131 / \*C  
 Precision potentiometers, servos, magnetic amplifiers, transformers, sensing elements, etc., for computer and other uses. Ms(300) Se(1941) Ic

Sperry Rand Corporation, Sperry Gyroscope Division Great Neck, N.Y. / Fieldstone 7-3600 / \*C  
 Ordnance; fire-control equipment. Automatic controls. Navigation equipment, sea and air Radar, Loran, gyrocompasses, precision instruments. Ls(18,000) Le(1910) Ac RMSa

Sperry Rand Corporation - Also SEE Remington Rand Divisions

Sprague Electric Co., 377 Marshall Street, North Adams, Mass. / Mohawk 3-5311 / \*C  
 Capacitors: miniature, and low dielectric hysteresis loss, for computer applications. Standard capacitors; precision and power type resistors; pulse transformers; radio interference filters; shift registers; printed circuits. Ls(6000) Le(1926) Ic RMSa

The Standard Register Co., Dayton 1, Ohio / Adams 6181  
 Electronic equipment (called "Stanomatic"), capable of sensing or reading printed codes on business documents and translating them into digital pulses which will actuate office machinery such as card punches, tape perforators, computers, etc. Ls Le Dlc RMSa

Stanford Computation Center, Stanford University, Stanford, California / \*C  
 Computing service; one CPC. ?s ?e Dc RCPa

Stereotronics, 66 Westland Rd., Weston 93, Mass. / \*C  
 Solid-state information-handling devices: transistor, magnetic, diode, ferro-electric, gas tubes, etc. Ss Se Dlc RMSa

Stromberg-Carlson (West Coast), Charactron & Special Products Laboratories, 3235 Hancock Street, San Diego 10, Calif. / Cypress 8-7701 / \*C  
 The Charactron, a computer output device for "debugging", tactical display, etc., converting coded information into tabular or graphic alphanumeric information on a cathode-ray-tube screen. Analog-to-digital conversion units. Ms(115) Se(1950) Ic RMSa

Sturrup, Inc., Middletown, Conn. / Diamond 6-9681 / \*C  
 Ultrasonic delay lines, transducers, etc., for computer and other uses. Ms(60) Se (1951) Ic RMSa

Sunshine Scientific Instrument Co., 1810 Grant Ave., Philadelphia 15, Pa. / OR 3-5600 / Analog field plotting equipment. Se(1947) Ic RMSa

Swedish Board for Computing Machinery, Drottninggatan 95A, (P.O.Box 6131), Stockholm 6, Sweden / Stockholm 23 55 90 / \*C  
 State central institution for research, development, and computation service on large-scale machines. Operates two automatic digital computers, BARK and BECK, designed and built by the Board. Research on numerical analysis; development of new computers. Com-

puting service (digital) using BARK and BECK. Ss(30) Se(1949) Dc RMCPa

Sylvania Electric Products, Inc., Electronic Systems Division, 100 First St., Waltham, Mass. / Twinbrook 3-9200 / \*C  
 Special purpose digital computer equipment. Ls Le(1901) Dc RMSa

Sylvania Electric Products, Inc., Radio and Television Div., 70 Forsyth St., Boston 15, Mass. / Kenmore 6-8900 / \*C  
 Electronic digital computers using printed circuit techniques. Subassemblies of diodes and triodes. Computer components. Ls (company 25,000; this division 190) Le(1901); this division, 1949) DAC RMSa

Sylvania Electric Products, Inc., Woburn Division, 100 Sylvan Rd., Woburn, Mass. / Woburn 2-3500  
 Semiconductor components, crystal diodes, transistors, and tubes for computer and other uses. Ls Le Ic RMA

Systematics, Inc., 103 Lyndon St., Hermosa Beach, Calif. / Frontier 2-7811  
 Computer components. Ss Se(1955) Dc RMSa

### T

Taller and Cooper, 75 Front St., Brooklyn, N.Y. / Ulster 8-0500 / \*C

Data recording and conversion systems, printers, perforators, analog to digital converters. Function generators, special purpose computers. Supervisory and control systems; remote control telemetering systems; card-to-tape converters; special punching and sensing equipment. Mechanical function generator control of machine tools and allied mechanisms. Toll equipment for bridges, highways, turnpikes. Ms(250) Me(1930) Dic RMSa

Tally Register Corp., 5300 14th Ave., N.W., Seattle 7, Wash. / Dexter 5500 / \*C

Special purpose business machines; electromagnetic pulse counters and pulsed relays; high-speed data reduction systems for telemetering applications; digital-input, multiple-symbol X-Y plotter with continuous grid printing and numeric abscissa. Ss(25) Se (1948) DCMc RMSa

Taylor Instrument Co., Rochester, N.Y.

Automatic controllers. Ls Le Cc RMSa

Technitrol Engineering Co., 2751 North 4 Street, Philadelphia 33, Pa. / Garfield 6-9105 / \*C

Computing and control equipment. Complete digital systems. Components, pulse transformers. Electrical and acoustic delay lines. High-speed memories. Digital computer "blocks". Ms(105) Se(1947) DAC RMSa

Technology Instrument Corporation, 531 Main Street, Acton, Mass. / Colonial 3-7711 / \*C

Potentiometers: linear and non-linear; single turn and multturn; for computer and other uses. Ms(355) Se(1946) Ic Ma

Telecomputing Corp., 12838 Saticoy St., No. Hollywood, Calif. / Po 5-8160 and St 7-8181 / \*C

Automatic data reading, recording, and plotting equipment. Automatic business data accumulation and analysis equipment; multiple access storage systems. Computing service; analog and digital; card programmed calculators, automatic graph readers, digital plotters, punch card machines. Ms(250) Se(1947) DCMc RMSPa

### Computers and Automation

Telequipment Corp., 80 Broad St., New York 4, N.Y. and Sea Cliff, N.Y. / Whitehall 3-7028 and Glen Cove 4-2990 / \*C

Inexpensive equipment ("code stacks") for attaching to an electric typewriter, adding machine, cash register, calculator, etc., so that it may control a tape perforator and punch paper tape simultaneously with typing. Ss Se Dlc RMSa

Telemeter Magnetics and Electronics Corp., 11801 Mississippi Ave., Los Angeles 25, Calif. / Arizona 8-7751 /

Special purpose data processing machines. Computer memory components; magnetic cores, drivers, reading amplifiers; automatic core testing equipment. High-capacity rapid-access ferrite core memories. ?s Se(1956) Dlc RMSa

Formerly division of, now subsidiary of International Telemeter Corp., which see.

Teleregister Corporation, 445 Fairfield Avenue, Stamford, Conn. / Fireside 8-4291, and (New York City) Ludlow 5-8900 / \*C

Digital special purpose computers. Data processing systems for special applications: inventory control, invoicing, travel reservations, flight data, stock market quotations, etc. Electro-mechanical digital display systems. Magnetronic Reservisor, in use at American Airlines reservations center. Magnetronic stock quotation system in use in Toronto Stock Exchange. Ls(550) Me(1928) Dlc RMSa

Teletypesetter Corporation, 2752 Clybourn Avenue, Chicago 14, Ill. / Graceland 7-5250 / and elsewhere / \*C

Tape perforators and operating units for local or distant automatic control of Linotypes and Intertypes. Ms(60) Me(1929) Ic RMSa

Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas / Dixon 1781 / and elsewhere / \*C Germanium and silicon transistors and diodes, precision resistors for computer and other uses. Ls(3000) Me(1930) Ic RMSa

Transistor Products, Inc., 241 Crescent St., Waltham 54, Mass. / Waltham 5-9330 / \*C Transistors, diodes. Ms(150) Se(1952) Ic RMSa

Tung-Sol Electric Inc., 95 8th Ave., Newark 4, N.J. / Humboldt 2-4200 / \*C

Electron tubes, transistors, for computer and other uses. Ls(6000) Le(1904) Ic RMSa

### U

Ultrasonic Corp., 640 Memorial Drive, Cambridge, Mass. / University 4-6800 / \*C

Analog computers, digital techniques, servomechanisms, machine tool controls, etc. Ms(475) Me(1945) DASc RMSa

Underwood Corp., One Park Ave., New York 16, N.Y. / Lexington 2-7000 / General Research Lab., 56 Arbor St., Hartford 6, Conn.; and elsewhere / \*C

Accounting machines, adding machines, typewriters. Elliott-Fisher and Sundstrand Machines. Underwood Samas punched card accounting machines and systems. Underwood electric typewriters, used in Harvard Mark

II calculator. ELECOM electronic computers. SEE also Electronic Computer Division of Underwood Corporation. Ls (company 13,000; laboratory, 100) Le(1894) Dlc RMSa

Union Switch and Signal Co., Division of Westinghouse Airbrake, Pittsburgh 18, and Swissvale, Pa. Railroad signaling and control systems. Aircraft flight simulators; mobile test rack for testing analog computers including simulators Ls(4000) Le Ic RMSa

U. S. Air Force, Aeronautical Research Laboratory, System Dynamics Branch, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio / KE 7111, X28235 / \*C

Has Oarac, CPC, ERA 1103; is acquiring IBM 704, Reeves DSS. Ms(62) Se(1948) DAC RCPa

U. S. Air Force, Cambridge Research Center, 230 Albany St., Cambridge 39, Mass. / University 4-4720

Developed the ABC (Automatic Binary Computer). Has a Computer Research Corp-102. Ms Me Dlc Ga

U. S. Air Force, Computation Research Sec., Wright Air Development Center, Wright-Patterson Air Force Base, Dayton, Ohio

Computing service, analog and digital: Card programmed calculators, Reacs, punch card; for government only. Se DAIC RCPa

U. S. Air Force, Inst. of Technology, Wright-Patterson Air Force Base, Dayton, Ohio / \*C

Electronic strategy machine, conceived by L. I. Davis. Philbrick Reac and GEDA equipment on hand. Ms(300) Se(1946) DAIC Ga

U. S. Air Force, Rome Air Development Center, Statistical Services Division, Griffiss Air Force Base, Rome, N.Y.

Elecrom 120, Bendix Digital Differential Analyzer D 12, Reeves Electronic Analog Computer, Benson-Lehner data reduction equipment, considerable IBM data processing equipment. Computing service: analog, digital; for government only. Se Dlc RCPa

U. S. Army, Ballistic Research Laboratories, Aberdeen Proving Ground, Aberdeen, Md. / \*C

Has Bell, Edvac, Eniac, Orivac computers and others. Developing supplementary and modernizing components. Computing service (digital) using these machines; for government and government contractors only. Ms Le Dc Ga

U. S. Navy, Naval Proving Ground, Computation and Exterior Ballistics Laboratory, Dahlgren, Va. / X627 / \*C

Has three digital computers -- Harvard Aiken Relay (Mark II), Aiken Dahlgren Electronic (Mark III), and Naval Ordnance Research Calculator (NORC). Computing service using these machines; for government and government contractors only. Ms(145) Me(1942) Dc RCPa

U. S. Navy, Naval Research Laboratory, Washington 25, D. C. / \*C

NAREC digital computer. Analog computers, servo mechanisms and data reduction. Ls(3200) Le(1923) DASc RCPa

U. S. Navy, Office of Naval Research, Special Devices Center, Port Washington, New York / Port Washington 7-3800 / \*C

Training devices using analog and digital computers. Ls(500) Me(1943) DASMc RMCGBa

**Poster of Organizations**

**University of California, Department of Mathematics, Numerical Analysis Research, Los Angeles 24, Calif. / Granite 3-0971 and Bradshaw 2-6161 / \*C**  
Research and teaching in use of digital computers for scientific computation. Operates SWAC on loan from the Office of Naval Research. Also maintain and operate machines, library and other equipment owned up to 1954 by the now inactive National Bureau of Standards Institute for Numerical Analysis. Ss (32) Se(1954-date of transfer from National Bureau of Standards) Dc RCPa

**Univ. of California, Berkeley, Calif. / \*C**  
CALDIC, California Digital Computer. Ss(10) Se(1947) Dc RPa

**University of Cambridge, University Mathematical Laboratory, Free School Lane, Cambridge, England**  
Built Edsac. Computing service (digital) for University. ?s Me Dc RCPa

**University of Illinois, Urbana, Ill.**  
Built electronic digital computer Ordvac for Ballistic Research Laboratory, Aberdeen. Has finished computer Illiac on same design, but with faster input-output using a photoelectric reader. Dc RCPa

**University of Manchester, Mathematical Laboratory, Manchester, England / \*C**  
Has automatic electronic digital computer built by Ferranti Electric Ltd. This laboratory developed much of the design. Ss(8) Se(1947) Dc RPa

**University of Michigan, Willow Run Laboratories, Willow Run Airport, Ypsilanti, Mich. / Ypsilanti 5110 / \*C**  
Digital and analog computers, including electronic and electromagnetic computers and simulators; both special and general purpose. Including MIDAC, IBM equipment, desk calculators, data processing systems. Computing services, including analysis and computation using all types of computers. Instruction in components of and the use of electronic computers of all types, e.g. programming, coding, numerical methods, etc. Ls(600) Se(1946) Dc RCPa

**University of Pittsburgh--SEE Mellon Institute**  
**University of Rochester, Computing Center, Rochester 20, N. Y. / Gr 3000**  
Computing services; Burroughs El01 computer on hand, IBM 650 expected. Se(1956) Dc RMSa RCPa

**University of Sydney, Dept. of Electrical Engrg., Section of Mathematical Instruments, Sydney, New South Wales, Australia**  
Analog computers. Ac Ra

**University of Toronto, Computation Centre, Toronto, Canada / Walnut 3-1327 / \*C**  
Digital, electronic computers. Now operating: a Ferranti Electric automatic computer; punch card machines. Computing service (digital) using the Ferranti computer. Ss (15) Se(1947) Dc RCPa

**University of Wisconsin, Numerical Analysis Laboratory, B-9 Bascom Hall, Madison 6, Wisconsin / Alpine 5-3311, X2137 / \*C**  
Computing service: analog, digital; Philbrick computer, card programmed calculator, IBM 650, punch card machines. Ss(12) Se DAIC RCPa

**V**

**Vaucanson, 11 rue de Surmelin, Paris 20e, France**  
Calculating machines. Dc RMSa

**Vectoron, Inc., 400 Main St., Waltham 54, Mass. / Waltham 5-8700**  
Special computers for accounting applications, etc. Precision potentiometers, precision gear assemblies, etc. Ms(200) Se(1949) Dlc RMSa

**Victor Adding Machine Co., 3900 No. Rockwell St., Chicago 18, Ill. / \*C**  
Adding machines, etc. Ls(1600) Le(1918) Dc RMSa

**VISIrecord, Inc., 54 Railroad Ave., Copiague, L. I., N. Y. / Amityville 4-4900 / \*C**  
Filing systems for all types of common language tapes in computers. Business control on edge-punched cards in conjunction with mechanical and electronic business machines. Ms(300) Ic RMSa

**W**

**The Walkirt Co., 145 West Hazel St., Inglewood 3, Calif. / Oregon 8-2873, Oregon 1-0212 / \*C**  
Unitized circuit packages, plug-in units, including binary scalers, linear ternary scalers; other digital computing activities. Ss(20) Se(1948) Dc RMSa

**Wang Laboratories, 37 Hurley St., Cambridge 39, Mass. / Trowbridge 6-1925**  
Magnetic delay-line memory units. Digital signal generators. Multiple Scalers. Static magnetic memory systems and other devices. Wedilog computers, shaft digitizing coders. Ss(8) Se(1951) Dc RMSa

**Waters Manufacturing, Inc., 4 Gordon St., Waltham, Mass. / Waltham 5-9020 / \*C**  
Potentiometers for servomechanisms, computers, and other uses. Ms(80) Se(1951) Ic RMSa

**The George Washington Univ., Logistics Research Project, 707 22nd St., Washington 7, D. C. / Sterling 3-4539 / \*C**  
ONR relay computer with magnetic drum memory. Data-handling machines. ONR electronic digital computer with magnetic drum memory. Computing service (digital) using these machines. Ms(50) Se(1950) Dc RCPa

**Watson Scientific Computing Laboratory, 612 West 116 St., New York, N. Y. / Monument 6-9600 / \*C**  
The pure science department of International Business Machines Corp. Simultaneous linear equation solver. Astronomical plate measuring machine. IBM punch card machines Research and instruction. Maker of Naval Ordnance Research Calculator (NORC). Ms (100) Me(1945) Dac RCPa

**Wayne University Computation Laboratory, Cass Ave., Detroit 1, Mich. / Temple 1-1450 / \*C**  
5300-word magnetic drum computer built of Burroughs pulse control equipment. Digital differential analyzer and electronic analog equipment. Computing service: analog digital. Instruction and training. Ss (30) Se(1950) Dac Ra

(cont'd on page 79)

## THE MARKET PLACE —

### THE COMPUTER FIELD:

#### PRODUCTS AND SERVICES FOR SALE OR RENT

(Cumulative, information as of May 3, 1956)

The purpose of this list, "The Market Place", is to give at least some information about nearly every product or service in the computer field that is offered for sale or rent and that we have been able to learn something about. This is the second edition of this list; it covers about 35 pages and contains over 700 entries. The first edition published a year ago covered about 21 pages.

There are two classes of entries in this list.

Class One entries are those for which THE NAME OF THE SUPPLIER IS ALL IN CAPITALS. Class One entries are likely to be complete and reliable; the supplier has either sent us his entry in response to our questionnaire or approved the proposed entry which we sent to him; he has thought enough of the value of the entry to pay the requested nominal charge of \$6 per entry, to help defray the cost of preparing and printing this part of the directory; and we have edited the entry, though usually in a very minor way. An index to Class One entries by name of supplier has been provided.

Class Two entries are those for which the name of the supplier is not all in capitals. Such entries are derived from other information reaching us. In some cases answers to questionnaires have been received where the supplier has not believed it desirable to make any payment; many of these entries have been condensed. In many cases, we have had no information at all from the supplier enabling us to verify what we have said about his product or service. In general, Class Two entries are less likely to be complete and reliable.

Questionnaire. Many of the entries in this list have been derived from answers to questionnaires which we sent out in February, March, and April to over 300 suppliers in the computer field.

The form of this questionnaire called the "Product Entry Form" is shown on page 28.

For a new or changed entry, the information we want is asked for on this form; the answers may be written on any piece of paper. Customary sales literature is very difficult for us to use, and need not be sent.

Style of Entry. The full entry for a product or service in the list consists of: name of supplier, address / name or identification of product or service / DESCR: a brief description of the product, in about 20 to 50 words — see examples in the list / USE: how it is used / price range, and whether for sale or rent. Every entry is subject to editing.

Abbreviations. The abbreviations used include: DESCR -- description; \*a -- address above (where several products made by one supplier are listed in succession).

Corrections. We have tried to make each entry correct to the extent of information in our possession. But it is inevitable that at least some errors have occurred, and we are eager to publish corrections. There will be no charge of course where the incorrectness of information is attributable to our error; in other cases there will be a requested nominal charge of \$9 an entry to be paid at the time when the new entry is sent in to us.

Revisions and Additions. The first supplement to "The Market Place" will, we expect, be published in the September issue of "Computers and Automation" closing about August 10. There will be a requested nominal charge of \$9 an entry to be paid at the time when the new entry is sent in to us.

## The Market Place --

### The Computer Field: Products and Services for Sale or Rent

#### LIST OF HEADINGS

In order to find information on products and services, it will be convenient to refer to the following list of 67 headings.

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2. Addressing Machines  
3. Analog Computers  
4. Analog-to-Digital Converters  
5. Arithmetical Circuits (for Digital Computers)  
6. Automatic Control Equipment
- C: 7. Capacitors (computer types)  
8. Card-to-Tape Converters  
9. Computer Components (see also specific types)  
10. Computers (see also: Analog Computers, Digital Computers)  
11. Computers, Test Equipment  
12. Computing Services  
13. Connectors (computer types)  
14. Consulting Services  
15. Courses by Mail (computer field)
- D: 16. Data Processing Machinery (see also Digital Computers)  
17. Delay Lines (computer types)  
18. Desk Calculators  
19. Differential Analyzers (see also Analog Computers)  
20. Digital Computers  
21. Digital-to-Analog Converters  
22. Diodes (computer types)
- E: 23. Electric Typewriters, controlled  
24. Electronic Tubes (computer types)
- F: 25. Fire Control Equipment
- I: 26. Information Retrieval
- K: 27. Keyboards
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29. Logical Circuits (for Digital Computers)
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- O: 37. Office Machines (computer types) (see also specific types)
- P: 38. Paper Tape Filing Systems  
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- V: 67. Visual Displays

The Market Place --

The Computer Field: Products and Services for Sale or Rent

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Class One entries are those for which THE NAME OF THE SUPPLIER IS ALL IN CAPITALS. Class One entries are likely to be more complete and reliable; the supplier has either sent us his entry or approved the proposed entry, and has considered his entry important enough to pay the requested nominal charge of \$6 per entry. The number refers to the number in the list of headings.

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### Product Entry Form for

### The Computer Directory, 1956

THIS IS THE INFORMATION WE WANT FROM YOU:

1. Name or identification of product (or service)?

\_\_\_\_\_

2. Brief description (20 to 50 words):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. How is it used?

\_\_\_\_\_

4. What is the price range?

\_\_\_\_\_

5. Under what headings should it be listed?

\_\_\_\_\_

HERE IS THE INFORMATION WE PUBLISHED LAST YEAR:

Under the heading: \_\_\_\_\_

Entry: \_\_\_\_\_

Additions, changes, remarks?

Organization \_\_\_\_\_

Address \_\_\_\_\_

Filled in by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

When filled in, please send this form to COMPUTERS  
AND AUTOMATION (address above), with \$6.00 re-  
quested nominal charge per entry, on or before  
April 30, 1956.

(  ) \$6.00 enclosed.

\_\_\_\_\_

Above is the form which was used for the  
questionnaires to suppliers.

## Computers and Automation

### A

#### 1. ADDING MACHINES

R. C. Allen Business Machines, Inc., 678 Front Ave., Grand Rapids 4, Mich. / adding machines, book-keeping machines, cash registers

Burroughs Corp., 6071 2nd Ave., Detroit, Mich. / adding machines, accounting machines, and book-keeping machines

Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif. / multiplying machines

FACIT, INC., 404 4th Ave., New York 36, N. Y. (subsidiary), Stockholm, Sweden (headquarters) / adding machines, Odhner adding machine with multiplying features

Felt and Tarrant Mfg. Co., Comptometer Division, 1735 No. Paulina St., Chicago 22, Ill. / adding and calculating machines, key driven, electric, and non-electric

FRIDEN CALCULATING MACHINE CO., INC., San Leandro, Calif. / adding machine / DESCRIPTOR: 10-key, electrically-operated adding machine; visible indication of items before they are printed or added; easy keyboard arrangement; 7 to 10 column capacity, extra column totaling capacity / USE: adding, subtracting, listing / \$325 to \$360; Model ABY for rapid multiplication, \$345 to \$380

FRIDEN CALCULATING MACHINE CO., INC. \*a/ Friden Add-Punch Machine / DESCRIPTOR: ten-key electrically-operated adding and listing machine that produces a standard adding machine tape as an original source document and, as a by-product, punches selected data on a "common language" tape for subsequent data processing / USE: adding-listing machine which may be used to record data for integrated data processing by card-punch or other common language machine / \$1500 (taxes not included)

MONROE CALCULATING MACHINE CO., Orange, N. J. / adding machines, desk calculators

THE NATIONAL CASH REGISTER CO., Dayton 9, Ohio / adding and bookkeeping machines; complete line of approximately 40 models / - / from \$130 to \$1025

OLIVETTI CORP. OF AMERICA, 580 5th Ave., New York 36, N. Y. / desk adding machines

REMINGTON RAND, DIV. OF SPERRY RAND CORP., 315 4th Ave., New York 10, N. Y. / Electric Adding Machine / DESCRIPTOR: 10-key keyboard operated by touch method / USE: business figurework / \$278 to \$578

UNDERWOOD CORP., One Park Ave., New York 16, N. Y. / Accounting machines, adding machine, Underwood, Elliott Fisher and Sundstrand machines

#### 2. ADDRESSING MACHINES

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17, Ohio / addressograph machines

ELLIOTT ADDRESSING MACHINE CO., 143 Albany St., Cambridge, Mass. / Elliott Addressing Machines / DESCRIPTOR: high speed addressing equipment with tabulating and statistical analysis functions; typewritable address stencils—manual or automatic preparation operated in conjunction with other types of tabulating equipment / USE: wherever repetitive writing of information is required / \$65 to \$18,000

#### 3. ANALOG COMPUTERS (see also DIFFERENTIAL ANALYZERS)

Allegany Instrument Co., Inc., 1091 Wills Mountain, Cumberland, Md. / Type K-7 Error Computer / DESCRIPTOR: simulates error-producing factors involved in wire strain transducer systems commonly employed in measuring force, strain, pressure, torque, etc.; computes by analog the effect of the various factors and presents the error directly in percent of correct magnitude / USE: values for system parameters are set on appropriate dials. The Error decade and Vernier are then adjusted to obtain a "null" reading and the Error Decade and Vernier will then read percent error / \$3565

American Machine and Foundry, Electronics Division, 1085 Commonwealth Ave., Boston 15, Mass.

Arma Corp., Old Country Rd., Garden City, L. I., N. Y. / USE: analog computers; components including resolvers, induction generators, etc. / basic weapon and control systems, navigational systems, precision remote control systems

ATLAS PRECISION PRODUCTS CO., 3801 Castor Ave., Philadelphia 24, Pa. / Electro Mechanical Analog Computers / design and manufacture of mechanical computers as used on fire control, radar, and aircraft / -

Audio Instrument Co., Inc., 133 West 14 St., New York 11, N. Y. / electronic, mechanical and optical analog computers

The Austin Co., 76 9th Ave., New York 11, N. Y. / "Computrols" / DESCRIPTOR: computers for control; engineered for special purposes; built from standard component sub-assemblies / USE: for industrial control applications, machine tools, etc.

Avion Instrument Co., 299 State Highway No. 17, Paramus, N. J. / analog computing machinery

Benson-Lehner Corp., 11930 Olympic Blvd., W. Los Angeles 64, Calif. / automatic and semi-automatic devices for computing, data analyzing, data reduction, optical measuring, guided missile analysis, etc.

BERKELEY DIVISION, BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. / EASE (Electronic Analog Simulating Equipment) / DESCRIPTOR: an analog computer-simulator consisting of operational amplifiers, push button control unit, function generators, function multipliers, etc. / USE: solution of differential equations, simulation of systems / \$6000 and up

Boeing Airplane Co., Seattle 14, Wash. / Boeing Analog Computer / DESCRIPTOR: low cost analog comput-

### Products and Services

er / USE: in problems regarding servomechanisms, air-frame stability, structural dynamics, process control, blending, electrical machinery, etc. / \$4433 for standard rack; accessories optional

Computer Co. of America, 149 Church St., New York 7, N.Y. / analog computers, specialized computers and accessories

COMPUTER ENGINEERING ASSOCIATES, INC., 350 N. Halstead St., Pasadena, Calif. / Direct Analogy Electric Analog Computer (DAEAC) / DESCRIPTOR: consisting of transformers, resistors, inductors, capacitors, amplifiers, metering system, and patch board control; applied using the approach of a network analyzer; maintains one-to-one correspondence of physical system parameters to electrical network elements / USE: engineering analyses / \$150,000 to \$1,000,000 f.o.b. CEA plus taxes

DATA PROCESSING ASSOCIATES, LTD., 1313 Wellington St., Ottawa, Canada / Electronic Digital and Analog Computing Equipment / DESCRIPTOR: Digital and analog computer systems, data reduction systems, application and installations services, consulting services, maintenance and field personnel. Canadian representatives for: ElectroData Corp. (DATA-TRON), Mid-Century Instrumatic Corp. (Analog), Telecomputing Corp. (data reduction), Tally Register Corp. (Plotters), Dian Laboratories (analog computing services). Research and development; laboratory facilities / USE: scientific and business uses / -

DONNER SCIENTIFIC CO., 2829 7th St., Berkeley 10, Calif. / Analog Computer; special accessories; analog time delay generators / DESCRIPTOR: simple desktop (Model 30) all the way up to elaborate facilities (120 or more operational amplifiers) with all necessary auxiliaries / USE: by engineers, mathematicians, educators, etc. / \$995 to \$150,000

EDIN CO., INC., 207 Main St., Worcester, Mass. / Frequency Spectrum Analyzer Model 8135 / DESCRIPTOR: Performs complete continuous component frequency analysis of any complex wave form, reading out all the frequencies and their energy contents in the form of a bar graph. Up to 24 component frequency read-outs occur in 10 secs. Frequency range 0.5 to 20,000 cycles per second / USE: to analyze electronic computer data for complex component frequency and energy contents / \$5,000

ECO PRODUCTION CO., 827 So. Vermont, Los Angeles, Calif. / Analog Computer / DESCRIPTOR: desk type analog computer / USE: data handling, etc. / \$7500

ELECTRONIC ASSOCIATES, INC., Long Branch, N.J. / Analog Computer Group 16-31R / DESCRIPTOR: A 20 amplifier, self-contained unit; to accomplish enlargement of the system, standard component groups including operational amplifiers, resolvers, servo multipliers, diode function generators, electronic multipliers, and other associated input and output equipment / USE: in computation, simulation, testing / \$15,000

ELECTRONIC CONTROL SYSTEMS, INC., 2138 Westwood Blvd., Los Angeles 25, Calif. / statistical analyzer / DESCRIPTOR: special purpose computer which records and classifies a great number of measurements into 16 intervals automatically plots out a frequency distribution curve / USE: quality control, product certification, component evaluation, inspection / \$9,000 to \$11,000

ELECTRONIC CONTROL SYSTEMS, INC., \*a / special purpose computers for military and industrial use, meeting customer's exact requirements /

Electronic Engineering Co., 180 So. Alvarado St., Los Angeles 57, Calif. / analog computing machinery

Farrand Optical Co., Bronx Blvd. and 238 St., New York 70, N.Y. / analog computers

Goodyear Aircraft Corp., 1210 Massillon Rd., Akron, 15, Ohio / GEDA Analog Computing Equipment / DESCRIPTOR: GN215-L3 (24 amplifier) Linear Analyzer, GN215-N3 Non-Linear Analyzer, A-14 GEDA Console Grouping of Computer Elements / USE: simulation, computation and solution of differential equations / \$8,000 and up

Hughes Research and Development Labs., Culver City, Calif. / small, automatic electronic analog computers for airborne use.

BILL JACK SCIENTIFIC INSTRUMENT CO., 143 Cedros Ave., Solana Beach, Calif. / airborne analog computers for "Recon" systems, aerial cameras

Kearfott Co., Inc., Clifton, N.J. / analog computers

Laboratory for Electronics, 75 Pitts St., Boston 14, Mass. / analog computers, special computers to suit customer requirements

LIBRASCOPE, INC., 808 Western Ave., Glendale 1, Calif. / mechanical and electrical computers; computing and controlling equipment for military applications

The W.L. Maxson Corp., 460 W. 34 St., New York 1, N.Y. / analog computers for fire control, navigation, etc.

Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N.Y. / analog computers

William Miller Instruments, Inc., 325 N. Halstead Ave., Pasadena 8, Calif. / Milac analog computer

Norden-Ketay Corp., 99 Park Ave., New York, N.Y. / analog computers for fire control systems, aviation ordnance, etc.

North American Research & Control Instruments Div., Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N.Y. / analog computers

GEORGE A. PHILBRICK RESEARCHES, INC., 230 Congress St., Boston 10, Mass. / Philbrick electronic analog computing equipment and components

Reeves Instrument Co., 215 E. 91 St., New York 28, N.Y. / "REAC" electronic analog computers

REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., 315 4th Ave., New York 10, N.Y. / analog computers; special purpose computers

SERVO CORP. OF AMERICA, 20-20 Jericho Turnpike, New Hyde Park, L.I., N.Y. / Servomat Building Blocks / DESCRIPTOR: electro-mechanical general purpose analog computer; extremely accurate; results stated in mechanical output for application in control systems; various component combinations apply to a wide range of industrial, design, educational, and telemetering requirements / USE: computer components, servomechanisms, control equipment / -

#### Computers and Automation

Servomechanisms, Inc., Westbury, N.Y. and El Segundo, Calif. / CA 500 Mach Computer / DESCRIPTOR: precision-built 400 cycle instrument utilizing a force-balance linkage for the determination of Mach number; mechanically compares differential and static pressures; resultant forces energize a servo loop which balances the computer and provides an output voltage or synchro shaft displacement proportional to Mach number / USE: all types of military and commercial aircraft applications

Servomechanisms, Inc., - also see "Data Processing Machines"

Société d'Electronique et d'Automatisme, 138 Blvd. de Verdun, Courbevoie, Seine, France / analog computers and components; analog computer OME-12

SOUTHWESTERN INDUSTRIAL ELECTRONICS CO., INC., P.O. Box 13058, Houston 19, Tex. / SIE Analog Computer / DESCRIPTOR: performs multiplication, division, addition, subtraction, logarithms, roots, and powers without vacuum tubes or moving parts / USE: especially, the solving of simultaneous non-linear algebraic equations; also particularly, fixed-program unattended real-time operation; and other uses / \$1000 and up

Wallind-Pierce Corp., 1928 Pacific Coast Highway, Lomita, Calif. / analog computers

Westinghouse Electric Corp., Industry Engineering Dept., East Pittsburgh, Pa. / analog computers

**4. ANALOG-TO-DIGITAL CONVERTERS**

ACF ELECTRONICS, INC., 800 N. Pitt St., Alexandria, Va. / ACF Model 1051 Voltage Encoder / DESCRIPTOR: all-electronic device providing fast, precise conversion of analog voltages to binary codes at rates up to 15,000 ten-bit codes per second. Output is asynchronous and is precise to one part in 1024 / USE: analog sensory devices, analog computing, telemetering PCM, etc. / \$5700

American Machine & Foundry, 1085 Commonwealth Ave., Boston, Mass. / analog-to-digital converter; digital servo with over 32,000 quantum units per revolution (shaft to digital conversion)

ATOMIC INSTRUMENT CO., 84 Mass. Ave., Cambridge 39, Mass. / Model 975 Analog-to-Digital Converter, "Atomicon" / DESCRIPTOR: all-electronic, high-speed balancing type analog-to-digital converter. Input range is  $\pm 20$  volts. The input impedance is  $10^6$  ohms; the output is either binary coded decimal or 10-wire decimal up to 3 decades. Speed of operation up to 5,000 conversions per second. Accuracy is in the order of 0.2% / USE: used between a transducer and an intermediate digital storage device in data processing systems / \$5,000 to \$10,000

The Austin Co., 76 9th Ave., New York, N.Y. / Analog-to-digital converter / DESCRIPTOR: quantizer of shaft position provides instantaneous analog-to-digital conversion; direct coupling eliminates servo; accuracy is independent of shaft acceleration; resolution to 1 part in 5000 / USE: in data handling systems / \$990 with control unit

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Analog-to-digital converters / DESCRIPTOR: electronic converting equipment for control, data reduction, and digital computer techniques; designs originated to meet special requirements / -

COLEMAN ENGINEERING CO., 6040 W. Jefferson Blvd., Los Angeles 16, Calif. / Digitizers / DESCRIPTOR: Coleman Digitizers convert shaft rotations into discrete settings of electrical contacts for operation of electric printers, electric typewriters, preparation of IBM punched cards, Flexowriter Tape, etc. / USE: convert rotating shaft positions into digits / about \$500 and up

FISCHER & PORTER CO., 330 Warminster Rd., Hatboro, Pa. / "Digi-Coder" / DESCRIPTOR: electro-mechanical high-speed analog-to-digital converter / USE: takes in shaft position representing flow-temperature, pressure, level, voltage and other variables, and puts out digital value

GENISCO, INC., 2233 Federal Ave., Los Angeles 64, Calif. / analog-digital converter / DESCRIPTOR: converts shaft rotation into decimal digital output by selecting electrical contact settings; non-ambiguity; absolute repeatability; can be cascaded to have any desired number capacity / USE: in data reduction applications, as an input device for recording and printing machines / \$400 to \$1000, depending on number capacity

G.M. Giannini & Co., Inc., 918 E. Green St., Pasadena 1, Calif. / Digital Data Recording Systems, Analog-to-Digital Converters / Servomechanisms to convert physical phenomena to shaft rotation; shaft position digitizer with sliding contacts; storage and sequencing controls / USE: to record data from wind tunnels, engine tests, radar, industrial processes, on punched cards, punched tape, or printed record / \$800 to \$50,000

Kearfott Co., Inc., Clifton, N.J. / analog-to-digital converter

THE NEWTON CO., 55 Elm St., Manchester, Conn. / shaft-to-digital converters

Norden-Ketay Corp., 99 Park Ave., New York, N.Y. / analog-to-digital converter / DESCRIPTOR: input is a shaft position; output is binary number; high operating speed; all digits appear simultaneously; both number and its complement are available; increasing count can be in either direction of rotation; small size

POTTER INSTRUMENT CO., 115 Cutter Mill Rd., Great Neck, N.Y. / analog-to-digital converter

J.B. Rea Co., Inc., 1723 Cloverfield Blvd., Santa Monica, Calif. / high-speed analog-to-digital converter (Reacon)

STROMBERG-CARLSON-SAN DIEGO, 1895 Hancock St., San Diego, Calif. / Analog to Digital Converter / DESCRIPTOR: high-speed converter that samples an analog voltage and converts to a binary coded decimal or straight binary code at 15,000 conversions per second; accuracy is 0.1% / - / -

TALLER & COOPER, INC., 75 Front St., Brooklyn, N.Y. / Analog to Digital Converter / DESCRIPTOR: trans-

### Products and Services

lates output or test data into digital form; receives data in the form of shaft rotations; the converter can control a card punch system or typewriter / USE: may be hooked up to potentiometers / \$450

**VICTOR ADDING MACHINE CO.**, 3900 N. Rockwell St., Chicago 18, Ill. / data simplification system (VICDAR, Victor Data Accumulation and Reduction) / DESCRI: multiple channel analog-to-digital converter; can sample within 2 microseconds; accuracy, 0.1%; output will operate tape or card punches, digital printers or electric typewriter; sampling rates from 1 to 1000 per second / USE: to record scientific data automatically, frequently in conjunction with a computer to reduce the data to final form / \$30,000 for a 20 channel system

Wallind-Pierce Corp., 1928 Pacific Coast Highway, Lomita, Calif. / analog-to-digital converters

### 5. ARITHMETICAL CIRCUITS (FOR DIGITAL COMPUTERS)

**Brush Electronics Co.**, 3405 Perkins Ave., Cleveland 14, Ohio / Digital Decade Counter / DESCRI: high speed decade counter with digital and analog outputs / USE: as storage or arithmetic unit / \$20 to \$30

**COMPUTER CONTROL CO., INC.**, 92 Broad St., Wellesley, Mass. / 3C-PAC Universal Logical Gating Package / DESCRI: a dynamic package operating at a 1 megacycle rate; will handle all Boolean functions of three variables, most Boolean functions of four and five variables; input consists of two four-leg and two three-leg gates buffered together; assertion and negation outputs provided, each of which will drive five pulse periods of delay and ten other gate legs / USE: PACs can be used as flip-flops, serial or parallel adders, subtractors, shift registers, comparators, code converters, logical switching networks, etc. / -

**PHILCO CORP.**, Government & Industrial Div., Philadelphia 44, Pa. - see "Digital Computers"

**THE WALKIRT CO.**, 145 West Hazel St., Inglewood 3, Calif. / plug-in pulse circuit packages / DESCRI: generally single-tube circuit stages, encapsulated in resin, plug-in form; complete counters, multivibrators, amplifiers, gates, triggers, pulse generators, etc. / USE: as a complete circuit stage in digital computing equipment / \$8 to \$20 per stage

### 6. AUTOMATIC CONTROL EQUIPMENT

**Askania Regulator Co.**, 240 E. Ontario St., Chicago, Ill. / hydraulic and electronic automatic control equipment

**The Austin Co.**, Special Devices Division, 76 9th Ave., New York 11, N. Y. / Automatic Controls / systems and devices for automatic control in commerce and industry; analog, digital, data-handling, servo, electronic, electromechanical; shaft position indicators and systems

**Automatic Signal Div.**, Eastern Industries, Inc., Nor-

walk, Conn. / Automatic volume density traffic controllers

**Avion Instrument Co.**, 299 State Highway No. 17, Paramus, N. J. / Automatic control machinery

**Barber-Colman Co.**, Rockford, Ill. / Automatic controls

**BENDIX COMPUTER DIV.**, **BENDIX AVIATION CORP.**, 5630 Arbor Vitae St., Los Angeles 45, Calif. / Electronic systems for control functions as related to digital computer techniques; computer controlled devices

**The Bristol Co.**, Waterbury 20, Conn. / Automatic recording, indicating, controlling, and telemetering instruments and components

**Daco Machine Co.**, Brooklyn, N. Y. / Computing controls for machine tools

**Datamatic Corp.**, 151 Needham St., Newton Highlands 61, Mass. / Machine control

**ELECTRONIC ASSOCIATES, INC.**, Long Branch, N. J. / Automatic process control

**ELECTRONIC CONTROL SYSTEMS, INC.**, 2138 Westwood Blvd., Los Angeles 25, Calif. / Industrial process and machine control systems; automatic test equipment

**GENERAL CONTROLS**, 802 Allen Ave., Glendale 1, Calif. / Automatic controls (pressure, temperature, level, flow)

**Hammarlund Mfg. Co., Inc.**, 460 W. 34th St., New York 1, N. Y. / Remote supervisory control and industrial telemetering equipment

**Hillyer Instrument Co.**, 54 Lafayette St., New York 13, N. Y. / Simulators, servomechanisms, sensing, computing, and actuating systems; automatic machine controls

**International Telephone and Telegraph Corp.**, 67 Broad St., New York 4, N. Y. / Equipment for automatic control of repetitive processes, clerical or industrial work

**BILL JACK SCIENTIFIC INSTRUMENT CO.**, 143 Cedros Ave., Solana Beach, Calif. / Control systems / DESCRI: control systems for aerial reconnaissance cameras employing special purpose analog computers, positional and velocity servo mechanisms, and intervalometers; design, development, and production of automatic control systems for reconnaissance and other purposes employing frequency-to-analog converters, analog computers, positional velocity servo mechanisms and special electro-mechanical devices, linear and non-linear / USE: in military aircraft / \$5,000 to \$30,000, depending upon complexity

**LIBRASCOPE, INC.**, 808 Western Ave., Glendale 1, Calif. / Research, development, and manufacturing of analog and digital control equipment and systems for industry

**LITTON INDUSTRIES**, Beverly Hills, Calif. / Automatic flight controls

**The W. L. Maxson Corp.**, 460 W. 34th St., New York 1, N. Y. / Automatic control machinery

**Minneapolis-Honeywell Regulator Co.**, Industrial Div., 4580 Wayne Ave., Philadelphia 44, Pa. / Automatic controllers. Brown Instruments. Recording and

#### Computers and Automation

indicating instruments and control equipment  
Norden-Ketay Corp., 99 Park Ave., New York, N. Y.  
/ Varieties of control devices; resistance to humidity, corrosion, high temperature, etc; many kinds of airborne instruments  
NOTIFIER MANUFACTURING CO., 239 South 11th St., Lincoln 8, Neb. / Alarm and Signal Equipment / DESCRIPTOR: fully automatic class "A" proprietary alarm and signal systems; automatic coding with visual indication for all input circuits; coding is successive non-interfering type / USE: automatic fire alarm, sprinkler supervision, watchman tour systems; class "A" proprietary rating / \$10,000 to \$250,000  
Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill. / Equipment for automatic control, coordinated and graphic control panels for process variables  
J. B. Rea Co., Inc., 1723 Cloverfield Blvd., Santa Monica, Calif. / Automatic control systems  
SERVO CORP. OF AMERICA, 20-20 Jericho Turnpike, New Hyde Park, L. I., N. Y. / Servomechanisms. Automatic Controls. Analysis and synthesis for controls manufacturers. Temperature controls by infra-red radiation. Industrial controls. Servo components and test equipment.  
SERVO CORP. OF AMERICA, \*a / Servotherm Infrared Radiation Pyrometer / DESCRIPTOR: designed for the remote measurement of temperatures where the target cannot be physically contacted and for temperature measurement and control of processes or parts in motion / USE: measurement and control of continuous process products, assembly line products, rotating members, hot spots / \$3850 to \$4875  
Servomechanisms, Inc., Post and Steward Aves., Westbury, N. Y. / Automatic electronic and electro-mechanical control systems and components  
Taylor Instrument Co., Rochester, N. Y. / Automatic controllers  
TECHNITROL ENGINEERING CO., 2751 N. 4th St., Philadelphia 33, Pa. / Control equipment

#### C

#### 7. CAPACITORS (COMPUTER TYPES)

P. R. MALLORY & CO., INC., 40 S. Gray St., Indianapolis 6, Ind. / Capacitors, computer grades / DESCRIPTOR: high-grade capacitors designed to meet wide variations in operating conditions; also commercial grades designed to meet normal computer requirements and operating conditions / USE: in electronic computers / \$3.35 each in lots of 1000

OHMITE MANUFACTURING CO., 3635 Howard St., Skokie, Ill. / Capacitors (Computer Types) -- Subminiature Tantalum type / DESCRIPTOR: sub-miniature tantalum capacitors for miniaturized transistor circuits; characteristics include high stability, excellent shelf life, greater capacity in a given size, and usability over a wider temperature range / USE: for coupling, filter, and by-pass requirements at

low voltage D. C. / 55¢ to \$5, depending on size and quantity  
Southern Electronics Corp., 239 W. Orange Grove Ave., Burbank, Calif. / Precision polystyrene capacitors  
SPRAGUE ELECTRIC CO., 377 Marshall St., North Adams, Mass. / Capacitors; miniature and low dielectric hysteresis loss, for computer applications; standard capacitors  
TOBE DEUTSCHMANN CORP., Norwood, Mass. / Capacitors / - / -

#### 8. CARD-TO-TAPE CONVERTERS

Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / card-to-tape converters / converts cards to tapes, using a magnetic storage element  
General Cybernetics Corp., P. O. Box 987, Beverly Hills, Calif. / card-to-tape converter (Model 155 Cybertac System) / DESCRIPTOR: a vacuum feed system with serial photoelectric reading; conversion electronics and buffer circuitry; built-in tape-handling unit / USE: conversion of punched cards to tape at speeds up to 2500 cards per minute / \$30,000  
INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. / Card-Controlled Tape Punch / DESCRIPTOR: performs the function of reading alphabetical and numerical information in IBM punched cards and of perforating 5-channel telegraphic tape with that data; the machine consists of a card reading unit and a tape punching unit / USE: the 5-channel tape may be used to transmit data automatically by commercial wire service / monthly rental, \$65

REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., 315 4th Ave., New York 10, N. Y. / 90-column tabulating-card-to-tape converter Type 318 / DESCRIPTOR: converts information from 90-column punched cards to 5 channel paper tapes; tapes perforated at 90 characters per minute / USE: card to tape conversion / rental, \$105 per month; sale, \$8500; prices subject to tax

TECHNITROL ENGINEERING CO., 2751 N. 4th St., Philadelphia 33, Pa. / Card-to-Tape Converters / DESCRIPTOR: card-to-tape converters, especially designed to handle Remington Rand or IBM cards and Potter, Raytheon, Ampex and other tape handling devices / - / \$45,000 up

#### 9. COMPUTER COMPONENTS (See Also SPECIFIC TYPES)

AIRCRAFT-MARINE PRODUCTS, INC., ELECTRONICS DIV., 2100 Paxton St., Harrisburg, Pa. / capacitors, taper pins, etc.

ALADDIN RADIO INDUSTRIES, INC., 703-705 Murfreesboro Rd., Nashville, Tenn. / Packaged Blocking Oscillator / DESCRIPTOR: A miniaturized unit consisting of an encapsulated blocking oscillator circuit, ready to plug in / USE: as a plug-in or soldered-in component which can be either "free run" or

### Products and Services

externally pulsed / price depends upon performance specifications required

**ALADDIN RADIO INDUSTRIES, INC., \*a / Pulse Transformer / DESCRI:** standardized line of ferrite cored pulse transformers, all built from the same basic parts / USE: impedance matching, blocking oscillators, for pulse inversion, etc. / from \$1.85 to \$3 in production run quantities

Alden Products Co., 114 No. Main St., Brockton, Mass / components for computing machinery

**AUTOMATIC ELECTRIC CO., 1033 West Van Buren St., Chicago 7, Ill. / DESCRI:** Dial telephone system components (company was originator of the dial telephone). Automatic control components. Relays; switches; telephone-type control components / USE: computing machinery, communications

Avion Instrument Co., 299 State Highway No. 17, Paramus, N.J. / amplifiers, electronic choppers, test equipment, servomechanisms, etc.

Bowmar Instrument Corp., 2315 Pennsylvania St., Fort Wayne, Indiana / mechanical computer components

Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio / computer components, recording analyzers, decades, tape transports

**CAMBRIDGE THERMIONIC CORPORATION, 445 Concord Ave., Cambridge 38, Mass. / components for computers**

**CINCH MANUFACTURING CORP., 1026 S. Homan Ave., Chicago 24, Ill. / Electronic Components / DESCRI:** tube sockets and shields, connector sockets and plugs, printed circuit boards, terminal strips and boards, barrier terminal strips, solder lugs, binding posts / USE: computing machinery, other equipment / -

**COMPUTER ENGINEERING ASSOCIATES, INC., 350 No. Halstead St., Pasadena 8, Calif. / Computer components**

Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass. / servomechanisms, amplifiers, etc.

**EECO PRODUCTION CO., 827 S. Vermont, Los Angeles, Calif. / Package Circuits / DESCRI:** plug-in packaged circuits, flip-flops, squaring circuits, cathode followers, gates, oscillators, etc; custom packaging of special circuits; stepping switches; diode logic; as used in Eeco desk type analog computer, Eeco wide band DC amplifiers, and other equipment / USE: in data handling, timing, and computing systems / plug-in's, \$8 to \$20, etc.

**ELECTRALAB, INC., Industrial Center, Needham Heights 94, Mass. / Printed Circuits / DESCRI:** high quality, ultra-reliable printed circuits for matrix boards and plug-in units. Plated-through holes and choice of gold, silver, solder, nickel, rhodium or copper plating / USE: for consistent wiring and mounting of components / -

Electronic Computer Div. of Underwood Corp., 35-10 36th Ave., Long Island City 6, N.Y. / pulse transformers, D C plug-in amplifiers, etc.

**ESC CORPORATION, 534 Bergen Blvd., Palisades Park, N.J. / Custom components only / DESCRI:** delay lines, pulse forming networks, pulse trans-

formers, filters, etc., according to customer specifications; some types available from stock / USE: broad / price determined by specifications

**General Cybernetics Corp., P.O. Box 987, Beverly Hills, Calif. / Model 154 Linear Motion Transducer / DESCRI:** a reluctance pickup for converting very small displacements into voltage at linearities of 0.1% of full scale / USE: in analog computers / \$135

**GENISCO, INC., 2233 Federal Ave., West Los Angeles, Calif. / computer components of electromechanical type**

**G.M. Giannini & Co., Laboratory Apparatus Div., 918 E. Green St., Pasadena 1, Calif. / computer components**

**HALLER, RAYMOND & BROWN, INC., State College, Pa. / Computer Components / DESCRI:** high quality logical elements / USE: in digital computing and logic applications / -

**Industrial Control Co., Wyandanch, N.Y. / Servo Multiplier, Model SL-1053 / DESCRI:** driven by d.c. data; accuracy 0.3%; response to 10 cycles per second; multiple 2 megohm summing inputs; no zero drift / USE: computing

**Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda 14, Md. / pulse transformers, input and output devices, pulse burst generators**

**LABORATORY FOR ELECTRONICS, 75 Pitts St., Boston 14, Mass. / plug-in packages for computer applications**

**LITTELFUSE, INC., 1865 Miner St., Des Plaines, Ill. / Fuses and fuse holders / DESCRI:** small glass enclosed cartridge type fuses and related fuse holders / USE: circuit overload protection in computing and other equipment / \$.02 to \$1.50 each

**Magnetics Research, Inc., 142 King St., Chappaqua, N.Y. / magnetic components for analog and digital systems and computers**

**Merchant Calculators, Inc., Oakland 8, Calif. / computer components**

**Merchant Research, Inc., 1475 Powell St., Oakland 8, Calif. / computer components**

**Mid-Century Instrumatic Corp., 611 Broadway, N.Y. 12, N.Y. / electronic function generators, electronic multipliers, etc.**

**The National Cash Register Co., Electronics Division, 3348 West El Segundo Blvd., Hawthorne, Calif. / computer components, input-output devices**

**NOTIFIER MANUFACTURING CO., 239 S. 11th St., Lincoln 8, Neh / computer circuits, switching circuits, memory and pulse storing devices, transistor devices**

**Ortho Filter Corp., 196 Albion Ave., Paterson 2, N.J. / computer components**

**PHILCO CORP., Government & Industrial Div., Philadelphia 44, Pa. — see "Digital Computers"**

**Radio Corp. of America, Tube Division, 415 S. 5th St., Harrison, N.J. / Electron Tubes, Semiconductor Devices, and Electronic Components / DESCRI:** receiving-type tubes, thyratrons, storage tubes, cathode-ray tubes, photo-conductive cells, photo-cells, transistors, crystal diodes, ferrite cores / USE: as components within equipment / -

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#### Computers and Automation

RAYTHEON MANUFACTURING CO., RECEIVING AND CATHODE RAY TUBES OPERATIONS DIVISION, 55 Chapel St., Newton 58, Mass. / Transistors, Semiconductor Diodes, Electron Tubes / DESCRIPTOR: silicon and germanium transistors, silicon power diodes, miniature and subminiature tubes, low drain filament, subminiature and other special tube types / USE: computer and related uses / -

SOLA ELECTRIC CO., 4633 West 16 St., Chicago 50, Ill. / Power supplies, regulated; high-transient capacity / DESCRIPTOR: direct current power supplies for exacting demands in computer loads, etc.; regulated output voltage; high short-time overload capacity for positive reliable operation / - / -

SOROBAN ENGINEERING, INC., Box 117, Melbourne, Fla. / computer auxiliaries such as high speed tape perforators (240 characters per second), coded automatic keyboards, automatic format tabulators, etc.

STROMBERG-CARLSON-SAN DIEGO, 1895 Hancock St., San Diego, Calif. / Computer Read-Out / DESCRIPTOR: a digital computer read-out system capable of operating at writing speeds in excess of 10,000 characters per second; presents alphanumeric and graphic information on photographic film in response to digital input information / USE: recording output of digital computer / under \$100,000

STURRUP, INC., One Factory St., Middletown, Conn. / Circuitry of various types / USE: computers and other equipment

STURRUP, INC., \*a / Coils / DESCRIPTOR: special small-lot transducers; relay coil winding; coil forms; other servo-component windings / -

SYLVANIA ELECTRIC CO., Waltham Labs., Waltham, Mass. / computer components

TECHNITROL ENGINEERING CO., 2751 No. 4th St., Philadelphia 33, Pa. / Digital Computer "Blocks" / DESCRIPTOR: consist of units that can be assembled; operation block, memory block, row-column flip-flop block, row-column selector block, pulse amplifier block, clock pulse generator and amplifier blocks, fusing and metering blocks, power control block, cabinet blocks, power blocks, cooling blocks / USE: control, arithmetic, memory, housing power supply, cooling / -

TUNG-SOL ELECTRIC, INC., 95 Eighth Ave., Newark 4, N. J. / Diodes, Electron Tubes, Transistors / - Wang Laboratories, 37 Hurley St., Cambridge 39, Mass. / digital signal generators, multiple scalers, static magnetic memory systems and other devices

#### 10. COMPUTERS (See Also: ANALOG COMPUTERS, DIGITAL COMPUTERS)

Allegany Instrument Co., Inc. 1091 Wills Mountain, Cumberland, Md. / Type K-1 Ballistic Computer / DESCRIPTOR: Computes data from any phenomenon that can be converted to an electrical signal. Presents such data visually, on paper tape, on IBM cards, etc. Includes: action time, force, ignition delay, peak values of force, total impulse (area beneath force-time curve), etc. / USE: When connected to

the pick-up devices and when the phenomenon is initiated, the K-1 computer automatically presents 12 channels of information / \$16,810

Bull S. A. Compagnie des Machines, 94 Avenue Gambetta, Paris 20<sup>e</sup>, France / commercial electronic computers and card programmed scientific computers

Link Aviation, Inc., Binghamton, N. Y. / Link Aerolog Performance Computer / DESCRIPTOR: a specialized computer for solving the classical steady-state equations of flight; accurately calculates rates of climb, maximum speeds, lift coefficients, and climb angles based on input variables / USE: by aircraft design groups, does not require specialists to operate / \$17,500

North American Aviation, Inc., Los Angeles International Airport, Los Angeles 45, Calif. / general purpose computers; fire control systems

Vectron, Inc., 400 Main St., Waltham 54, Mass. / special computers for accounting applications, military applications, etc.

#### 11. COMPUTER TEST EQUIPMENT

ELECTRONIC CONTROL SYSTEMS, INC., 2138 Westwood Blvd., Los Angeles 25, Calif. / Continuity Tester / DESCRIPTOR: automatic rapid test of cable harnesses resulting in positive identification of incorrect lead connections / USE: production harness assembly testing

HOOVER ELECTRONICS CO., 3640 Woodland Ave., Baltimore 15, Md. / Test equipment and test systems / DESCRIPTOR: specialized test equipment; sequential test equipment; computer systems including telemetering and missile data handling; binary statistical analyzers; thermocouple integrators / USE: to suit customers' requirements / -

SERVO CORP. OF AMERICA, 20-20 Jericho Turnpike, New Hyde Park, L. I., N. Y. / Servoboard / DESCRIPTOR: a set of standard precision mechanical parts including gears, shafts, bearings, hangers, mounting plates, etc. which, when coupled to the necessary electrical rotating components, provides a flexible experimental assembly of a servo system, computer, or regulator; these components are available as a set in Models 1111, 1112, 1113 Servoboard Kit, or as individual parts / USE: testing equipment / \$365 to \$920 for complete Kits

SERVO CORP. OF AMERICA, \*a / Servoscope / DESCRIPTOR: a multiple signal generator with means for comparing the signal output with the response of a servo system, component, or low frequency network / USE: in testing equipment / \$1390 for Model A; \$1950 for Model D

#### 12. COMPUTING SERVICES

ADALIA, LTD., 1410 Stanley St., Montreal 2, Canada / Computing services, consulting, problem analysis, programming, coding. Equipment: ALWAC III-E General Purpose Electronic Digital Computer

### Products and Services

System (\$40 per hour rental) / -

**ALPHA COMPUTING, INC.**, 909 Stonehill Lane, Los Angeles 49, Calif. / Computing Service / Technical Computing Service, using any of several large and medium computers in the area / fixed-price bid per complete job

**Armour Research Foundation of Ill. Inst. of Tech.**, 10 West 35th St., Chicago 16, Ill. / Computing Service / analog and digital; Goodyear Electronic Differential Analyzers, Two Channel Electronic Function Generator, card programmed calculator

**Askania Regulator Co.**, 240 E. Ontario St., Chicago 11, Ill. / Computing Service / Analog; Philbrick analog computers

**Bank of America National Trust and Savings Association**, Controllers Dept., Equipment Research Section, 500 Howard St., San Francisco, Calif. / digital computing service / have IBM 702 automatic digital computer / unrestricted as to clients

**Battelle Memorial Inst.**, 505 King Ave., Columbus 1, Ohio / computing service / analog and digital differential analyzer, card programmed calculator, punch card machines / -

**BENDIX COMPUTER DIV.**, **BENDIX AVIATION CORP.**, 5630 Arbor Vitae St., Los Angeles 45, Calif. / Computation Laboratory / has installation of All-Purpose Digital Computer (G-15 System), Digital Differential Analyzer (D-12), and other data processing equipment / rates by hour, for programmers and machine time

**Bureau of the Census**, Washington 25, D.C. / tabulation of statistical data by special machines designed and built for own use, by commercial punch-card equipment, and by electronic computing system (the Univac) / USE: Bureau of Census

**Burroughs Corp.**, Electronic Instrument Div., 1209 Vine St., Philadelphia, Pa. / computing services / analysis, programming and computation on digital computer UDEC II / - / \$75 per hour

**Cambridge University**, University Mathematical Laboratory, Free School Lane, Cambridge, England / computing service / uses Edsac

**Computation Centre**, University of Toronto, Toronto, Ontario, Canada / computing services / programming and consulting services; machine time on Ferut (Ferranti University of Toronto computer) / - / Ferut time, \$80 to \$100 per hour

**COMPUTER CONTROL CO., INC.**, 92 Broad St., Wellesley, Mass. / Mathematical Services / DESCRI: problem analysis, coding, program checking, and production on machine best suited to the problem; staff with wide experience / -

**COMPUTER ENGINEERING ASSOCIATES, INC.**, 350 N. Halstead St., Pasadena, Calif. / Engineering Analyses / DESCRI: develop and execute analyses for engineering problems using our computer installation and staff / USE: simulates physical systems with electrical networks / -

**COMPUTING DEVICES OF CANADA, LTD.**, P.O. Box 508, Ottawa, Ontario, Canada / Computing Service / DESCRI AND USE: analysis, programming and computation on NCR 102D and REAC; available on self-service basis or all services provided — see also "Consulting Services"

**Cornell Computing Center**, Rand Hall, Cornell Univ., Ithaca, N.Y. / digital computing service / card programmed calculator, punch card

**Datamatic Corp.**, 151 Needham St., Newton Highlands, 61, Mass. / computing services / computing services to analyze and process problems in operations research, applied mathematics, engineering, and general business accounting by digital computer

**DATA PROCESSING ASSOCIATES, LTD.**, 1313 Wellington St., Ottawa, Canada — see "Consulting Services"

**DIAN LABORATORIES, INC.**, 611 Broadway, New York, N.Y. / Analog consulting and computing service / complete computing center / USE: analysis and solution of problems for both government and industry

**ELECTRO DATA CORP.**, 460 Sierra Madre Villa, Pasadena, Calif. / Computing Service, Control Computing / DESCRI: problem analysis, programming, coding and running of problems on DATATRON electronic data processing machines / USE: customer may do own programming, coding, or turn over problem and data to company for solution / machines, \$80 per hour; service and time of personnel priced at fixed rates

**ELECTRONIC ASSOCIATES, INC.**, Princeton Computation Center, Princeton, N.J. / analog computing facility / serves industry, government, business

**FERRANTI, LTD.**, Computer Centre, 21 Portland Pl., London W 1, England / computing and information-handling laboratory

**Financial Publishing Co.**, Mathematical Tables Div., 82 Brookline Ave., Boston 15, Mass. / computing service; digital; card programmed calculators, punch card

**THE FRANKLIN INSTITUTE LABORATORIES FOR RESEARCH AND DEVELOPMENT**, 20th St. and Benjamin Franklin Pkwy., Philadelphia 3, Pa. / computing service; analog; large network analyzer, AC; UNIVAC (due to operate in fall, 1956)

**M. S. GELLMAN & CO.**, 199 College St., Toronto, Ontario / Computing Services / programming for digital computers; systems analysis and synthesis; complete computing and data-processing service

**GENERAL ELECTRIC CO.**, Schenectady, N.Y. / computing service; analog; network analyzer AC and DC, differential analyzer

**GENERAL KINETICS, INC.**, 555 23rd St. South, Arlington 2, Va. / Services to Digital Computer Users and Manufacturers / DESCRI: mathematical studies; numerical analysis; programming services for major general purpose computers; data reduction services; system studies and evaluation including operations research; construction, modification, and repair of peripheral equipment and special components / - / estimates prepared for each job

**Georgia Inst. of Technology**, Rich Electronic Computer Center, Atlanta 13, Ga. / Computer Center / DESCRI: feasibility studies, systems analysis, problem analysis, programming, coding, machine computation, etc. Computers: ERA 1101 and IBM 650 presently in operation / USE: general purpose / non-profit, cost-reimbursement operation

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#### Computers and Automation

Harvard University, Harvard Computation Laboratory, Cambridge 38, Mass. / computing service: digital; Harvard Mark I and IV machines

INTERNATIONAL BUSINESS MACHINES CORP., Houston, Texas / Scientific Computing Center / IBM 650, other equipment

INTERNATIONAL BUSINESS MACHINES CORP., Los Angeles, Calif. / Scientific Computing Center / IBM 704, 650, other equipment

INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. / Scientific Computing Center / IBM 704, 650; other equipment

INTERNATIONAL BUSINESS MACHINES CORP., Washington, D. C. / Scientific Computing Center / IBM 704, 650, other equipment

INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. / 121 Service Bureaus all over the country / punched card machines and experienced operators to solve technical computing problems or process business data; locations of service bureaus furnished on request

KCS DATA CONTROL, LTD., Suite 62B, Bay-Grosvenor Bldg., 880 Bay St., Toronto 5, Ontario, Canada -- see "Consulting Services"

ARTHUR D. LITTLE, INC., 30 Memorial Drive, Cambridge 42, Mass. / Consulting and Computing Services / DESC: engineering and scientific computations, including formulations of problems; data handling studies and design of systems; feasibility studies and evaluations / USE: in management control, operations research or applied mathematics / monthly billing, based on personnel charges and computer time

MACHINE STATISTICS CO., 27 Thames St., New York 6, N. Y. / Punch Card Data Processing Service / DESC: Equipped with full complement of latest IBM punch card equipment including 407's, 101's, 604; IBM 650 scheduled to arrive late 1956. Have handled all phases of accounting and statistical work; also actuarial, market research, etc. / USE: large company -- overflow and special jobs; small company -- entire systems / prices of jobs, \$50 to \$500,000

Mass. Institute of Technology, Office of Statistical Services, Cambridge 39, Mass. / statistical and scientific computing, using punch card machines and Whirlwind I / USE: administrative services, teaching, research, scientific computation / -

Moore School of Electrical Engineering, University of Pennsylvania, 200 S. 33 St., Philadelphia, Pa. / computing service: analog and digital; MSAC, differential analyzer, card programmed calculator, punch card machines

National Bureau of Standards, Applied Mathematics Div., Washington 25, D. C. / numerical analysis and computing service: digital; using Seac and punched card machines; for government and government contractors only

National Cash Register Co., Electronics Div., 3348 West El Segundo Blvd., Hawthorne, Calif. / computing service: digital; Cadac 102A, etc

Northrop Aircraft, Inc., Hawthorne, Calif. / Computing and Data Handling Services / DESC: com- puting service on EAI precision analog and IBM 797 digital equipment; also data handling and reduction; develops and builds computing and data handling components and systems to order; operates own equipment / - / rates on request

GEORGE A. PHILBRICK RESEARCHES, INC., 230 Congress St., Boston 10, Mass. / computing service: analog; Philbrick equipment

Purdue University, Dept. of Math., Lafayette, Ind. / computing service: digital; card programmed calculator, punch card machines

J. B. Rea Company, Inc., 1723 Cloverfield Blvd., Santa Monica, Calif. / computing service / digital computer: IBM Model 2 card-programmed calculator; analog computer: Electronic Associates computer; problem solving staff available / - / \$20 to \$50 per hour; also fixed-price

RECORDING & STATISTICAL CORP., 100 Sixth Ave., New York 13, N. Y., and also Regional Service Bureaus in Boston, Chicago, Montreal, and Toronto / Computing and data processing services; electronic digital computers and punched card equipment of latest types available in all regional offices / - / -

Reeves Instrument Co., 215 East 91st St., New York 28, N. Y. / computing services / computing service: analog; Reac

REMINGTON RAND UNIVAC DIVISION, SPERRY RAND CORP., Frankfurt, Germany / Electronic Computer Service Center / DESC: programming and computing services on Univac systems and other equipment / USE: special problems, routine services

REMINGTON RAND UNIVAC DIVISION, SPERRY RAND CORP., 2601 Wilshire Blvd., Los Angeles, Calif. / Electronic Computer Service Center / DESC: programming and computing services on Univac systems and other equipment / USE: special problems, routine services / -

REMINGTON RAND UNIVAC DIVISION, SPERRY RAND CORP., 315 4th Ave., New York 10, N. Y. / Electronic computer service center / DESC: programming and computer services on Univac and Univac Scientific Computer Systems and other equipment / USE: special problems and routine services / -

REMINGTON RAND UNIVAC DIVISION, SPERRY RAND CORP., 1902 West Minnehaha Ave., St. Paul, Minn. / Electronic Computer Service Center / DESC: programming and computing service on Univac Scientific system, and other equipment / USE: special problems, routine services / -

RENSSELAER POLYTECHNIC INSTITUTE, Computer Laboratory, 110 Eighth St., Troy, N. Y. / Computing Service / DESC: The basic computer facility is REAC equipment; it includes 40 operational amplifiers, four servo units (three multiplying potentiometers each, resolvers on two) 6 channels of function generators, 6 dual channel electronic multipliers, an input-output drum and four channels of recording. Also, precision magnetic tape recorders. An extensive amount of auxiliary equipment including some developed by laboratory personnel is available / USE: commercial contracts; research activities of the school / machine and two-man staff, \$50 an hour with one eight hour day minimum; staff, no

### Products and Services

machine use), \$7 an hour

Scientific Computing Service, Ltd., 23 Bedford Sq., London W. C. 1, England / Computing Service / desk machine calculators; preparation of programs and calculations on automatic computers; problem solving; consulting / - / -

SOUTHWESTERN COMPUTING SERVICE, 910 South Boston Ave., Tulsa 19, Okla. / Southwestern Computing Service / DESCR: service organization with mathematicians, punch card equipment, electronic computers, etc. / USE: solution of engineering and business problems and data reduction / -

Swedish Board for Computing Machinery, Drottninggatan 95A, (P. O. Box 6131), Stockholm 6, Sweden / Computing service using two computers, BARK and BESK, designed and built by the board; BARK is a binary, automatic relay computer; BESK is a binary electronic sequence computer, storing orders and data in a parallel Williams memory or in a magnetic drum memory; research on numerical analysis

TELECOMPUTING CORP., 12838 Saticoy St., No. Hollywood, Calif. / Data Reduction Services / film and oscillograph measuring and recording services, using Telecomputing personnel and equipment for work on customer records / - / from \$6 to \$10 an hour, depending upon machine used

University of California, Dept. of Mathematics, Numerical Analysis Research, 405 Hilgard Ave., Los Angeles 24, Calif. (formerly National Bureau of Standards' Institute of Numerical Analysis) / digital computing service / has Swac, and other equipment / solving government, industry, business, problems, etc.

University of Michigan, Willow Run Laboratories, Willow Run Airport, Ypsilanti, Mich. / Computing Services / DESCR: consultation, problem formulation, analysis, programming, coding; data reduction, including processing, graphing, and drafting; instruction in programming and numerical methods; employing digital computers, MIDAC, IBM 604, and desk calculators; analog computer containing 172 drift-stabilized amplifiers, 15 resolvers, 12 servo multipliers, 13 plotting tables, and 10 function generators / USE: both government and industrial contracts

University of Toronto, Computation Center, Toronto, Canada / computing service (digital) using a Ferranti Electric automatic computer; punch card machines

University of Wisconsin, 306 North Hall, Madison 6, Wisc. / computing service / both analog and digital / Philbrick Electronic Analog Computer; Card Programmed Calculator; punch card machines / unrestricted

U. S. Air Force, Computation Research Section, Wright Air Development Center, Wright Patterson Air Force Base, Dayton, Ohio / computing service / DESCR: analog and digital; card programmed calculators, Reacs, punch card machines / USE: for government only

U. S. Air Force, Rome Air Development Center, Computing Facilities Section, Griffiss Air Force Base, Rome, N. Y. / computing service / analog, digital; Elecom 120, Bendix Digital Differential Analyzer D12, Reeves Electronic Analog Computer, Benson-Lehner data reduction equipment, etc. / for government only

U. S. Army, Ballistic Research Laboratories, Aberdeen Proving Ground, Aberdeen, Md. / has Bell, Edvac, Eniac, Ordvac computers and others; computing service using these machines; for government use only

U. S. Naval Proving Ground, (Naval Ordnance Computation Center), Dahlgren, Va. / Computing Service / DESCR: three digital computers -- Naval Ordnance Research Calculator (NORC), Aiken Dahlgren Electronic Calculator (ADEC), Aiken Relay Calculator (ARC); and auxiliary equipment; computing and analysis services / USE: for Government and Government Contractors only / -

Wayne University, Detroit 1, Mich. / Computation Laboratory / DESCR: 5300-word magnetic drum computer, UDEC, built of Burroughs pulse control equipment; IBM 650 electronic data processing machine; undergraduate and graduate education in computers and applications; informal training programs; research in business systems / USE: instruction, solution of problems, etc. / -

Westinghouse Electric Corp., Industry Engineering Dept., East Pittsburgh, Pa. / computing service; analog and digital; using Anacom, AC and DC network analyzers, and punch card machines

### 13. CONNECTORS (COMPUTER TYPES)

AIRCRAFT MARINE PRODUCTS, INC., ELECTRONICS DIV., 2100 Paxton St., Harrisburg, Pa. / Terminals and Connectors / insulated and uninsulated; for wire sizes 26 through 600 CMA

AIRCRAFT MARINE PRODUCTS, INC., ELECTRONICS DIV., \*a / Taper Terminations / small, self-locking taper pins and taper tab receptacles for fast connections to multiple contact connectors, relays, stepping switches, etc.

AIRCRAFT MARINE PRODUCTS, INC., ELECTRONICS DIV., \*a / "Taper Blocks" / Miniature termination blocks with tapered connections; can be assembled in building block form to provide many connections in small spaces

AMPHENOL ELECTRONICS CORP., 1830 S. 54th St., Chicago 50, Ill. / Connectors / DESCR: all types of connectors for computer applications, including AN, RF and Rack & Panel connectors in standard, miniature and sub-miniature sizes / USE: Sub-unit plug ins; radio frequency and electrical power / -

CAMBRIDGE THERMIONIC CORP., 445 Concord Ave., Cambridge 38, Mass. / Connectors / DESCR: Jacks and plugs, insulated or non-insulated; jack is rivet type. Plugs allow solder bond to wire leads plus crimp over insulation / USE: for patch work on panels / plugs, \$43 M to \$63.60 M; jacks, \$19.10 M to \$28.25 M

DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City, N. Y. / Precision Connectors (contin-

### Computers and Automation

ental) / DESCRIPTOR: sub-miniature or miniature, precision multi-contact electrical connectors; special designs and standard components / USE: in various electronic equipment including computers, guided missiles and for radar tracking / -

#### 14. CONSULTING SERVICES (Computer Field)

**ADALIA LIMITED**, 1410 Stanley St., Montreal 2, Canada / Consulting services in digital and analog computer applications, data processing, automatic control, design and development of special input, output, storage and computing equipment; systems analysis and design; operations research. Also problem analysis, programming, coding and computing service / Have ALWAC III-E Computer System / -  
**ALPHA COMPUTING, INC.**, 909 Stonehill Lane, Los Angeles 49, Calif. / Consulting Service / Technical Computing Service, using any of several large and medium computers in the area / fixed-price bid per complete job

**The Austin Co.**, 76 Ninth Ave., New York 11, N. Y. / engineering, design, development of electronic and electro-mechanic systems for control systems for industry and government; plant studies, determining economic feasibility of automation equipment for labor saving, process control, product improvement

**AUTOMATION CONSULTANTS, INC.**, 1450 Broadway, New York 18, N. Y. / Consultants in electronic systems and devices, including automatic information handling; publishers of "Office Automation"

**Automation Engineers Co.**, 246 W. State St., Trenton, N. J. / Management consultants / analysis of opportunities and value of automation

**BASIC AND EXPERIMENTAL PHYSICS**, Box 689, Falmouth, Mass. / Consulting Services / DESCRIPTOR: research, studies, design, development, testing, and military and commercial applications for digital and analog computer components, circuits and systems; also contract engineering services with engineers working directly under the client's supervision / -

**BERKELEY ENTERPRISES, INC.**, 815 Washington St., Newtonville 60, Mass. / Consulting Service / consultation in logical design, applications, and marketing of automatic data-processing machinery

**CANNING, SISSON AND ASSOCIATES**, 914 South Robertson Blvd., Los Angeles 35, Calif. / Consultants in utilization of electronic computers and other automatic data handling equipment; publisher of "Data Processing Digest"

**COMPUTER CONTROL CO., INC.**, 92 Broad St., Wellesley 57, Mass. / consulting service by engineers, mathematicians, physicists in design, construction and programming of large-scale digital systems / -

**COMPUTING DEVICES OF CANADA, LTD.**, P. O. Box 508, Ottawa, Ont., Canada / Consulting Services / DESCRIPTOR. & USE: consulting on applications of computers and data processing machines to technical computing and business data processing; exclusive Canadian agents for Elliott Bros., (London)

Ltd., Electronic Data Processing Systems / -  
**DATA PROCESSING ASSOCIATES, LTD.**, 1313 Wellington St., Ottawa, Ont., Canada / systems studies; applications of high speed automatic data processors; military, scientific and industrial fields

**The de Florez Co.**, 116 East 30th St., New York, N. Y. / consulting services, such as development of new processes and machinery

**DIAN LABORATORIES, INC.**, 611 Broadway, New York 12, N. Y. / Computing and consulting services; analog computing center; associated with Mid-Century Instrumatic Corp.

**JOHN DIEBOLD AND ASSOCIATES, INC.**, 40 Wall St., New York, N. Y. / Management Consultants / Specializing in management science. Provides counsel on the management problems of organization, communications, policy formulation, production, distribution. Staff includes specialists in automation, computers, automatic control equipment, operations research, linear programming. Specifically engaged in helping clients put management science to work in the solution of their problems

**WESLEY B. EDGAR**, 206 Palmetto State Life Bldg., 1310 Lady St., Columbia 1, S. C. / Consulting Services

**Ebasco Services, Inc.**, 2 Rector St., New York 6, N. Y. / Consulting Services / management consultants, including the application of electronic systems to data processing and engineering / -

**ElectroData Corp** -- see "Computing Services"  
**Fairbanks Associates**, 248 Greenwich Ave., Greenwich, Conn. / Consultants in application and installation of electronic systems in clerical methods and procedures; evaluation of proposed savings; operations research

**M. S. GELLMAN & CO.**, 199 College St., Toronto, Ontario / Consulting Services / Consultants in electronic computer applications; selection, installation, and operation of computer systems; programming for digital computers; systems analysis and synthesis; complete computing and data-processing service

**GENERAL ELECTRIC CO., TUBE DEPT.**, One River Rd., Schenectady, N. Y. / Tube Application Assistance / DESCRIPTOR: the company offers assistance in the selection of proper tubes and in the evaluation of circuit design and tube usage / USE: by designers and manufacturers of electronic computers / no charge to equipment manufacturers

**General Research Co.**, 603 Jackson St., Fall Church, Va. / Consulting and procurement services / Analysis of and recommendations for data processing equipment requirements; consulting on computer applications and procedures; procurement of computing equipment and other data processing devices

**Georgia Inst. of Technology**, Rich Electronic Computer Center, Atlanta 13, Ga. / Computer Center / DESCRIPTOR: Feasibility studies, systems analysis, problem analysis, programming and coding, and machine computation, etc. Computers ERA 1101 and IBM 650 are presently in operation / USE: general purpose; available to Governmental, educational, industrial and commercial organizations / non-profit, cost

### Products and Services

reimbursement operation  
Hastings, Jr., Cecil, 136 Kuualia St., Lanikai, Hawaii / Approximations for digital computers  
KCS DATA CONTROL, LTD., Suite 62B, Bay-Grosvenor Bldg., 880 Bay St., Toronto 5, Ont., Canada / Consulting, programming and computing services / consultation on selection, installation and application of electronic computing and data processing systems for business, scientific and engineering problems and processes; analysis of problems and routines; planning of projects; training of clients' staff; programming and computing service for business, scientific engineering, design and statistical calculations / -  
ARTHUR D. LITTLE, INC., 30 Memorial Drive, Cambridge 42, Mass. / Consulting Services / DESCRIPTOR: engineering and scientific computations including formulation of problems; data handling studies and design of systems; feasibility studies and evaluations / USE: in management control, operations research or applied mathematics / monthly billing, based on personnel charges and computer time  
MACHINE STATISTICS CO., 27 Thames St., New York 6, N. Y. / Punch Card Data Processing Service / DESCRIPTOR: equipped with full line of latest IBM punch card equipment including 407's, 101's, 604; IBM Type 650 scheduled to arrive late 1956; have handled all phases of accounting and statistical work; also actuarial, market research / USE: large company -- overflow and special jobs; small company -- entire systems / price range, \$50 to \$500,000  
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. / Consulting and System Design / design of computing and data handling systems; and determination of requirements / -  
Pi-Squared Engineering Co., Inc., 230 Congress St., Boston 10, Mass. / Analysis and solution of engineering problems; analog computing equipment available  
Price Waterhouse & Co., Management Advisory Services, 56 Pine St., New York 5, N. Y. / Consulting service; applications of systems and equipment to data processing in business  
THE RAMO-WOOLDRIDGE CORP., COMPUTER SYSTEMS DIV., 5730 Arbor Vitae St., Los Angeles 45, Calif. / Consulting Services / DESCRIPTOR: systems analyses leading to an optimum application of modern automation techniques and equipment; specification and installation of procedures and equipment to accomplish recommendations of systems studies / -  
Scientific Computing Service, Ltd., 23 Bedford Sq., London W.C. 1, England / Consulting Service / consulting regarding machines (electronic, analog, and desk), numerical analysis, tables, and calculating methods for problems of all kinds / - / -  
SOROBAN ENGINEERING, INC., Box 338, Melbourne, Fla. / Consulting Services / DESCRIPTOR: consulting on data preparation and output tabulating components and systems in addition to specialized electronic digital computing devices and systems / - / approximately \$100 per day

15. COURSES BY MAIL (Computer Field)

EDMUND C. BERKELEY & ASSOCIATES, 815 Washington St., Newtonville 60, Mass. / Courses by Mail / DESCRIPTOR: courses and guided study by mail in automatic computers, construction of small electric brain machines, construction of small robots, symbolic logic, other scientific subjects / USE: instruction / \$22 to \$35  
BUSINESS ELECTRONICS, INC., Box 3330 Rincon Annex, San Francisco, Calif. / Home Study Course, "Programming for Business Computers" / DESCRIPTOR: Instruction in developing and programming electronic systems for business problems such as payroll, accounts receivable, inventory control and sales analysis for a theoretical computer called BEC; this training is related to five of the commercially available business computers / USE: home or office study / \$110.00; 10% cash discount

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16. DATA PROCESSING MACHINERY  
(see also DIGITAL COMPUTERS)

Alden Electronic and Impulse Recording Equipment Co., Alden Research Ctr., Westboro, Mass. / Facsimile recording equipment  
American Machine & Foundry, 1085 Commonwealth Ave., Boston, Mass. / Digital data-handling equipment / -  
AMPEX CORP., 934 Charter St., Redwood City, Calif. / Magnetic Tape Recorders, Programmers, Memory Units, Input-Output Tape Units  
APPLIED SCIENCE CORP. OF PRINCETON, P. O. Box 44, Princeton, N. J. / Multipurpose Automatic Data Analysis Machine / radio telemetering and automatic data conversion; also devices for automatic data conversion; also devices for automatic and semi-automatic reduction and analysis of telemetering and radar data / -  
Armour Research Foundation, 10 West 35th St., Chicago, Ill. / Digital, analog, and data handling equipment  
ATOMIC INSTRUMENT CO., 84 Mass. Ave., Cambridge 39, Mass. / Model 577, Multi-channel Strain Gauge Analyzer & Recorder / DESCRIPTOR: contains up to 100 strain gauge bridges and d. c. amplifiers, a high-speed relay commutator, the "Atomicon" Analog-to-Digital Converter, and a high-speed tape printer. The entire system operates in real time, sampling bridges at a maximum rate of 240 bridges per second. The maximum input sensitivity is .001 inch per inch full scale for gauge factors of 2. The over-all operating accuracy including drift is about plus or minus 1/4% (not including gauge error). / USE: as a complete system for static and quasi-dynamic materials testing / \$50,000 to \$100,000  
The Austin Co., 76 Ninth Ave., New York 11, N. Y. / Austin Automatic Data Recording System / DESCRIPTOR:

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flexible high-speed electronic equipment to measure, record, store, and program data at rates which can utilize the speeds of electronic computers; sampling up to 20 times per second / USE: automatic logging of variables in production or laboratory testing; evaluation of performance / \$40,000 to \$80,000

Beckman Division, Beckman Instruments, Inc., Fullerton, Calif. / Multi-channel digital data handling systems / 200 channel strain gage recorder; automatic process control, digital data handling and recording

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Electronic data processing machines

Benson-Lehner Corp., 11930 Olympic Blvd., W. Los Angeles 64, Calif. / Oscillograph Trace Reader (OSCAR) / DESCRIPTOR: applies calibrations to trace amplitude; output is either punched tape or punched card for computer input / USE: preparing oscillograph trace records for computer input / \$4,500 to \$11,000

Benson-Lehner Corp., \*a / Ballistic Film Analyzer and Recorder (Boscar) / DESCRIPTOR: "Ballistic Film Reader" makes measurements; output is either punched tape or cable to a Card Punch for making punch cards / USE: to reduce data on frame-to-frame film such as gunsight camera film, theodolite film, and other film data on which measurements are to be made; and thus produce a form for computer input / \$11,000 to \$22,000

BURLINGAME ASSOCIATES, 103 Lafayette St., New York 13, N. Y. / Analog computers, servo analyzers, servo control devices, digital voltmeters, etc. / COLEMAN ENGINEERING CO., 6040 W. Jefferson Blvd., Los Angeles 16, Calif. / Data Reduction Systems / DESCRIPTOR: data reduction machines, used to semi-automatically measure data on film and record it into various data tabulating equipment; also oscillogram readers / -

Consolidated Engineering Corp., 300 N. Sierra Madre Villa, Pasadena 8, Calif. / Digital and analog data handling and conversion systems (Sadic, Milisadic, etc.)

COOK RESEARCH LABORATORIES, DIV. OF COOK ELECTRIC CO., 2700 Southport Ave., Chicago, 14, Ill., / Magnetic data recording systems, digital, analog, and hybrid information processing systems, particularly for aircraft and airborne applications. Special purpose Input-Output equipments for use as adjuncts to commercial computers. Computing, programming, and equipment maintenance services / -

Datamatic Corp., 151 Needham St., Newton Highlands 61, Mass. / Electronic computer systems for general accounting and data-processing operations

THE DAVIES LABORATORIES, INC., 4705 Queensbury Rd., Riverdale, Md. / Automatic data reduction equipment / DESCRIPTOR: converters for magnetic tape to punched card, punched paper tape, or magnetic tape; original magnetic tape data may be either analog FM or PWM, or digital. Automatic Wave Analyzer for frequency analysis of analog data

DENNISON MANUFACTURING CO. -- see "Punch Card Machines"

ELECTRONIC ASSOCIATES, INC., Long Branch, N. J. / Dataplots, Models 3033 and 1133 / DESCRIPTOR: complete data reduction systems; except for the digital reading device, each model is a self-contained system capable of independent operation, and includes all necessary system functions such as scaling, parallaxing, and coding; a full four-decimal-digit system, or equivalent, is used; reliability is assured through the use of chopper stabilized d-c amplifiers and fully sealed relay matrices / USE: designed to accept digital data from punched cards or punched paper tape, and present the analog equivalent of this data in graphical form on an X-Y recorder / -

ELECTRONIC CONTROL SYSTEMS, INC., 2138 Westwood Blvd., Los Angeles 25, Calif. / Automatic Test Equipment / DESCRIPTOR: special purpose automatic electronic test equipment tailored to customer's exact requirements / USE: determined by specific application / -

ELECTRONICS CORP. OF AMERICA, Business Machines Div., 10 Potter St., Cambridge 42, Mass. / MAGNEFILE / DESCRIPTOR: special purpose business machine for inventory and similar uses / USE: in the office to maintain running records of Inventory Control, Production Planning, Scheduling, and Control, Sales Analysis, etc. / Rental, \$1,200 per month

Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / "Datrac" / DESCRIPTOR: Reversible data reduction systems; data converter systems; data translators / USE: data reduction; data conversion

FISCHER & PORTER CO., 330 Warminster Rd., Hatboro, Pa. / Automatic Logger / DESCRIPTOR: automatically measures and assembles information from plant, process, or research operations and presents data as typewritten log, punched paper tape or other digital output / USE: for automation purposes on continuous processes / -

FISCHER & PORTER CO., \*a / Multiple Pressure Readout System / DESCRIPTOR: utilizes single high accuracy Press-I-Cell pressure measuring device to sample and record simultaneously up to 200 pressures with accuracy of 1 part in 2000 / USE: for fast digital readout of pressures in wind tunnels, chemical plants, test facilities, etc. / -

FRIDEN CALCULATING MACHINE CO., INC., San Leandro, Calif. / Friden Computyper, Model C / DESCRIPTOR: Automatic billing machine which combines electric typewriter, fully automatic calculating mechanism, common-language tape reader and punch. The Computyper takes in common-language tape, punched as a by-product of order writing, and automatically types out the invoice heading, automatically-computed extensions, taxes, charges, discounts, net total, etc. The tape-punch unit automatically records selected data for conversion into punch cards / USE: automatic billing / -

Hughes Research and Development Laboratories, Hughes Aircraft Co., Culver City, Calif. / Automatic data

### Products and Services

handling systems for commercial and military applications

**INTERNATIONAL BUSINESS MACHINES CORP.**, 590 Madison Ave., New York 22, N. Y. / Electronic Calculators and Data Processing Machines — see "Digital Computers"

**International Telemeter Corp.**, 2200 Stoner Ave., Los Angeles 25, Calif. / Automatic document-handling machinery

**LIBRASCOPE, INC.**, 808 Western Ave., Glendale, Calif. / all phases of data-handling

**LOGISTICS RESEARCH, INC.**, 141 S. Pacific Ave., Redondo Beach, Calif. — see "Digital Computers"

**Marchant Research, Inc.**, subsidiary, Marchant Calculators, Inc., 1475 Powell St., Oakland 8, Calif. — see "Digital Computers"

**MONROE CALCULATING MACHINE CO., MONROBOT LABORATORY**, Morris Plains, N. J. / Data Processing Machines

**MOUNTAIN SYSTEMS, INC.**, 864 Franklin Ave., Thornwood, N. Y. / MODAC Data Processing Machine / DESCRIPTOR: digital electronic computers for statistics, accounts receivable, filing, etc.; drums, tape or punch cards in and out / USE: bookkeeping, mailing list maintenance, etc. / \$100,000 to \$500,000

**NATIONAL CASH REGISTER CO.**, Dayton 9, Ohio / Cash registers, accounting machines, adding machines, electronic data-processing systems / -

**NUCLEAR DEVELOPMENT CORP. OF AMERICA**, 5 New St., White Plains, N. Y. / Special purpose data handling systems, and system design

**NUCLEAR DEVELOPMENT CORP. OF AMERICA**, \*a / — see "Digital Computers"

**REMINGTON RAND UNIVAC DIVISION, SPERRY RAND CORP.** — see "Digital Computers"

**RICHARDSON CAMERA CO.**, 171 W. Magnolia Blvd., Burbank, Calif. / Data Film Reader / DESCRIPTOR: assesses data recorded on film from 8 mm. to 70 mm.; interchangeable film transports and lenses; cinematograph variable to 24 F. P. S.; stop, motion forward, and reverse / USE: can be used with analog-to-digital converter in assessing data on films of missile test, aircraft test, rocket test, instrumentation recordings, oscillograph recordings, etc. / \$3650 to \$20,000, depending on accessories

**Servomechanisms, Inc.**, Westbury, N. Y. and El Segundo, Calif. / Mechanical Development Apparatus / DESCRIPTOR: Appropriate groups of these precision-built mechanical components designed for synthesizing instrument and control system equipments in the breadboard phase of development can be assembled into a desired mechanism for a test program; then they may be dismantled, and used for other setups / USE: in mechanical experimental effort as in mechanisms for programmers, analog computers, servo systems / -

**Servomechanisms, Inc.**, \*a / Heading synchronizer / DESCRIPTOR: combines a standard servo amplifier and positioning mechanism into a complete computer utilizes the azimuth heading data from a magnetic compass as an input / USE: furnishes to the automatic pilot a continuous output signal representing the heading error between the actual bearing of the aircraft and a previously chosen compass heading

**Servomechanisms, Inc.**, \*a / Automatic Industrial Process Controller / DESCRIPTOR: Monitors and controls grinding operations for large industrial users / USE: industrial applications / -

**Servomechanisms, Inc.**, \*a / Angle of Attack Computer / DESCRIPTOR: Uses data from pressure and acceleration transducers and a weight network to solve continuously and simultaneously the mathematical equations for angle of attack and any desired functions of this angle; supplementary outputs such as ram ratio, static pressure and Mach number may be obtained / USE: aircraft applications / -

**Servomechanisms, Inc.**, \*a / Master Air Data Computer / DESCRIPTOR: A central clearing house for aerodynamic intelligence, delivering either this same intelligence or quantities computed from it in the forms required by the principal control systems / USE: a single coordinated source for input information required by the various control and instrumentation systems of an aircraft / -

**SYSTEMATICS INC.**, 30 Hermosa Ave., Hermosa Beach, Calif. / Integrated data processing equipment / DESCRIPTOR: electromechanical devices which transmit information from one make and type of business machine to another; "common-language" equipment; tie-ins to punched tape and punched cards / USE: computer input / \$1250 to \$3500

**SYSTEMATICS INC.**, \*a / NCR-IBM intercoupler / DESCRIPTOR: an attachment which interconnects an NCR accounting machine type 31 or 32 to an IBM key punch-model 024 or 026; numeric or alphanumeric; may use Commercial Controls tape punch, five or eight channel / USE: eliminates need for key punch or verifier operators on many applications / from \$1850 for numeric card punching up to \$3450 for complete alphanumeric tape punching, including tape equipment

**SYSTEMATICS INC.**, \*a / -- see "Punched Card Machines"

**TALLER & COOPER, INC.**, 75 Front St., Brooklyn, N. Y. / Data recording and conversion system

**TALLER & COOPER, INC.**, \*a / Telemetering Remote Control System / DESCRIPTOR: controls an unlimited number of plant functions automatically or manually by means of a single pair of wires / USE: for water works, sewage works, other industrial processes, etc. / \$3000 up

**TALLY REGISTER CORP.**, 5300 14th Ave., N. W., Seattle, Wash. / High-speed data reduction systems for telemetering applications. Special purpose business machines

**TELECOMPUTING CORP.**, 12838 Saticoy St., No. Hollywood, Calif. / Data processing machinery / DESCRIPTOR: automatic data reading, recording, and plotting equipment; automatic business data accumulation and analysis equipment / USE: by scientific computing and data reduction installations / from \$4000 to \$20,000

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TELEMETER MAGNETICS, INC., 11801 Mississippi Ave., Los Angeles 25, Calif. / Magnetic Cores, Magnetic Storage Systems, Magnetic Core Grading and Testing Equipment, Special Purpose Data Processing Machines / DESCRIPTOR: ferrite cores with a wide range of characteristics, and other ferrite configurations for use in digital computers; large scale magnetic core storage systems for digital computers; buffer storage units for use in special data processing systems and as parts of input-output systems for computers / - magnetic cores range from a few cents each; memory systems range from \$100,000 to \$500,000; buffer units are in the \$10,000 range

TELEREGISTER CORP., 445 Fairfield Av., Stamford, Conn. / Magnetronic Reservoir Reservation System / DESCRIPTOR: inventory of accommodations such as airline seats or railroad reserved space is maintained on a magnetic drum / USE: ticket agents at multiple remote locations check availability by use of key sets, reduce stored inventory when a sale is made, and store information on specific assignment of accommodations / rented on service contract, price varies

TELEREGISTER CORP., \*a / Telefile / DESCRIPTOR: Inventory of products maintained on a magnetic drum and/or magnetic tapes. Also maintained: commitments, prices, discounts, etc. / USE: Operators change stored data in accordance with production, orders received and shipments; when invoice is typed, Telefile makes extensions, applies discounts, updates inventory. Availability checks can be made by instantaneous visual display or by printed tabulation / rented on service contract; price varies

TELEREGISTER CORP., \*a / Bid-Asked Quotation System / DESCRIPTOR: prices of stocks are maintained on a magnetic drum; electronic equipment decodes requests, locates desired stock, reads and converts information, and transmits it / USE: customer dials three-digit number assigned to specific stock; quotation appears on ticker tape / rented on service contract; price varies

VICTOR ADDING MACHINE CO., 3900 N. Rockwell St., Chicago 18, Ill. / Digital Accumulating Printer / DESCRIPTOR: solenoid actuated adding machine; accepts digits serially at a rate of 20 per second plus 0.3 seconds per line printing time; adds, subtracts, and provides balances; 7 to 11 column capacity; alphabetic type, column splitting and other special features available / USE: to accumulate control totals, obtain averages, verify data accuracy / \$430 to \$565

VICTOR ADDING MACHINE CO., \*a / Digital Multiplying Printer / DESCRIPTOR: solenoid actuated adding and multiplying machine; can perform multiplication, addition, subtraction / USE: general calculating use, and some special problems / \$690  
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass. / Data handling equipment / DESCRIPTOR: system for reducing data / USE: reduce raw data, such as wind tunnel data, properly corrected to yield immediately usable results / -

Telequipment Corp., Sea Cliff, N. Y. / Code Converter / DESCRIPTOR: By means of compact diode matrices

converts decimal to binary, alphabetical to binary, and vice-versa / USE: as input-output device with computers / \$300 and up

17. DELAY LINES (Computer Types)

Alden Products Co., 114 No. Main St., Brockton, Mass. / Magnetic Delay Line Units

American Machine & Foundry Co., Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass. / Delay Lines

ANDERSEN LABORATORIES., 39 Talcott Rd., West Hartford, Conn. / Solid Ultrasonic Delay Lines / DESCRIPTOR: Fused quartz electronic delay devices; suitable for use in storing modulated r-f signals 6 to 4500 microseconds / USE: in digital computers as a data storage device; a recirculation system / \$100 to \$1000 for most computer applications

Audio Instrument Co., Inc. 133 W. 14th St., New York 11, N. Y. — see "Magnetic Tape Recorder"

BRYANT GAGE & SPINDLE DIVISION, Box 620, Springfield, Vt. — see "Magnetic Drums"

COMPUTER CONTROL CO., INC., 92 Broad St., Wellesley, Mass. / 15 and 30 Unit Delay Panels / DESCRIPTOR: 15 and 30 separate one-microsecond electrical delay lines; delay lines may be used separately or joined in series; characteristic impedance of each line is 95 ohms; basic one-microsecond delay interval, accurate to within 2% / USE: computers, pulse circuits, test equipment, etc. / \$260, \$465

COMPUTER CONTROL CO., INC., \*a / Solid Acoustic Memory / DESCRIPTOR: Modulator; temperature controlled quartz delay line; amplifier; detector; reshape gate; 91 ohm power output. Information can be stored at pulse repetition rates up to two megacycles with delay ranging up to 1100 microseconds / USE: provides pulse storage at high pulse repetition rates / \$600 to \$1000

Electronic Computer Div. of Underwood Corp., 35-10 36th Ave., Long Island City 6, N. Y. / delay lines, decade delay lines

Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / Delay Lines / precision delay lines capsulated in plastic / - / -

The Gudeman Co. of California, 9200 Exposition Blvd., Los Angeles 34, Calif. / Delay Lines / miniature; distributed and lumped parameter; delay times, .01 to 200 microseconds; taps as required; impedances from 50 to 5000 ohms; packaged for military environmental requirements / USE: for timing and coding functions / \$4 to \$150

Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda 14, Md. / Delay Lines / many types; all particularly suited to computer use; accurate, stable with respect to temperature and time / USE: throughout digital computers and in associated test equipment / \$25 to \$375 for standard types

LABORATORY FOR ELECTRONICS, 75 Pitts St., Boston 14, Mass. / Delay lines (mercury, quartz)

STURRUP, INC., One Factory St., Middletown, Conn. / Solid-Ultra Sonic Delay Lines and Component Post

### Products and Services

Delay Channels / wide band widths; frequency; handling ability; better than 0.05 microseconds rise / TECHNITROL ENGINEERING CO., 2751 N. 4th St., Philadelphia 33, Pa. / Delay Lines / DESCRIPTOR: distributed parameter and lumped constant electrical delay lines; standard, 1/4" diameter, about 3" to 6" long; arranged for plug-in, pig-tail, or fuse clip mounting; other forms available / - / \$2.85 to \$8.50

TOBE DEUTSCHMANN CORP., Norwood, Mass. / Delay Lines / - / -

Wang Laboratories, 37 Hurley St., Cambridge 39, Mass. / Magnetic delay-line memory units

### 18. DESK CALCULATORS

Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif. / Desk calculators

Fabrica Addizionatrice Italiana SS, Viale Umbria 36, Milan, Italy / Desk calculators to add, subtract, multiply, divide, print

FACIT, INC., 404 4th Ave., New York, N.Y., also 235 Montgomery St., San Francisco, Calif. / Facit Calculator, ESA-O / DESCRIPTOR: size, 7-7/8" x 10-5/8" x 7"; wt., 26-1/2 lbs.; fully automatic; adds, divides, subtracts, multiplies; capacities, 9 x 8 x 13; electric clearing; 10-key system; portable; made of fine Swedish steel / USE: for all office calculations, one hand operation / \$495 plus tax

FRIDEN CALCULATING MACHINE CO., INC., San Leandro, Calif. / Automatic Desk Calculator / DESCRIPTOR: add, subtract, multiply, divide automatically; wide variety of styles including Model SRW for automatic extraction of square root / USE: desk calculation / \$400 to \$1300

Hamann Calculating Machine Co., 2118 Land Title Bldg., Philadelphia 10, Pa. / Adding, subtracting, multiplying desk calculators

Marchant Calculators, Inc., 1475 Powell St., Oakland 8, Calif. / Automatic electric calculators (desk type) / DESCRIPTOR: Fully automatic models, with multiplication, division, decimals, carriage control, dial clearance, accumulation, round-off, squaring. Marchant-Raytheon Binary-Octal calculators: fully automatic multiplication and division directly performed in both binary and octal number systems; conversions between decimal number system and octal or binary number systems readily made with complete display of result / USE: adjuncts to binary electronic digital computers and general office calculations / from \$400 to \$2750

MONROE CALCULATING MACHINE CO., Orange, N.J. / Desk calculating machinery for adding, calculating, and bookkeeping

OLIVETTI CORP. OF AMERICA, 580 5th Ave., New York, N.Y. / Calculating and printing machines, fully automatic printing calculators

REMINGTON RAND DIVISION, SPERRY RAND CORP., 315 4th Ave., New York 10, N.Y. / Model 99 Calculator that prints / DESCRIPTOR: automatic multiplic-

ation and division; 10-key touch addition and subtraction; automatic credit balance / USE: for figure-work where printed proof of computations is desired / \$635 to \$735

VICTOR ADDING MACHINE CO., 3900 N. Rockwell St., Chicago 18, Ill. / Desk Automatic Printing Calculator / DESCRIPTOR: desk calculating machine with printing / USE: office calculations / \$635

### 19. DIFFERENTIAL ANALYZERS

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Differential Analyzer (Digital) Attachment (DA-1) / DESCRIPTOR: attachment to G-15 General Purpose Computer providing a differential analyzer with 108 integrators, and 108 constant multipliers; input and output of punched paper tape, typewriter, magnetic tape, or punched cards; also graph plotter and graph follower can be incorporated / USE: provides solution to linear and non-linear differential equations / \$13,700

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., \*a / Digital Differential Analyzer (D-12) / DESCRIPTOR: sixty integrator digital differential analyzer with input from punched paper tape or graph follower; output to graph plotter, typewriter, punched tape, or visually on console scope / USE: provides solution to linear or non-linear differential equations, split-boundary value problems, integral equations, etc. / \$76,500

Computer Company of America, 149 Church St., New York 7, N.Y. / Differential analyzers

Goodyear Aircraft Corp., Dept. 931, Akron 15, Ohio / Goodyear electronic differential analyzers

LITTON INDUSTRIES, 336 N. Foothill Dr., Beverly Hills, Calif. / "Litton 20" Digital Differential Analyzer / DESCRIPTOR: 20 Integrator Digital Differential Analyzer; speed, 60 iterations per sec; accuracy one part in 250,000; graph plotter and curve followers available; small size / USE: easily solve linear and non-linear differential equations, generate functions, etc. / approx. \$10,000

THE NATIONAL CASH REGISTER CO., ELECTRONICS DIV., 3348 West El Segundo Blvd., Hawthorne, Calif. / decimal digital differential analyzers

### 20. DIGITAL COMPUTERS

Allegany Instrument Co., Inc., 1091 Wills Mountain, Cumberland, Md. / Type K-1 Ballistic Computer (analog and digital) / DESCRIPTOR: The K-1 computes data of any phenomenon that can be converted to an electrical signal. It presents this data both on the front panel and on paper tape or IBM cards, and includes: action time, force, ignition delay, peak values of force, total impulse (area beneath force-time curve), etc. / USE: The K-1 is connected to the pick-up devices and when the phenomenon is initiated, it automatically presents 12 channels of information / \$16,810

### Computers and Automation

American Machine & Foundry Company, Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass. / Digital computers

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. / Model 580, High Speed Data Analyzer / DESC: a special-purpose digital computer for computing auto-correlation and cross-correlation coefficients (of order up to 30) for data sets. The data sets are entered into the machine serially on two channels at the rate of 100 words per second in seven-digit binary code. The output is a four-digit decimal printed on adding machine tape / USE: statistical analysis / \$60,000

The Austin Co., 76 Ninth Ave., New York 11, N. Y. / Digital Computers, Special Purpose / special purpose computers for applications where general purpose computers are too costly or do not meet requirements / USE: by business and industry for high speed computations / -

Avion Instrument Co., 299 State Highway No. 17, Paramus, N. J. / Digital computing machinery

Bell Telephone Laboratories, Murray Hill, N. J. / Bell general purpose computers (relay and electronic, digital and analog) / USE: government use, company's own use, only

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., 5630 Arbor Vitae St., Los Angeles 45, Calif. / DA-1 Digital Differential Analyzer Attachment to G-15 Computer — see "Differential Analyzers"

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., \*a / Digital Differential Analyzer (D-12) — see "Differential Analyzers"

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., \*a / G-15 All-Purpose Computer System / DESC: provides a Digital Differential Analyzer feature in addition to all features of G-15; can include graph plotter and graph follower / USE: as combination General Purpose Computer and Differential Analyzer / \$58,500

BENDIX COMPUTER DIV., BENDIX AVIATION CORP., \*a / General Purpose Computer G-15 / DESC: stored program, general-purpose computer with input and output of punched paper tape, typewriter, magnetic tape and punched cards / USE: provides solutions for mathematical problems; also can perform control functions / \$44,800

Burroughs Corp., Computer Section, 1616 Walnut St., Philadelphia 3, Pa. / Burroughs E101 Electronic Computer / DESC: General purpose, electronic, digital computer; desk size; easy programming, low cost, simple operation, small size. Maximum data storage capacity of 220 12-digit words; magnetic drum storage; program capacity, 128 single address instructions; 24-digits per second printer output / USE: computing, engineering data reduction, design problems, solving formula-type problems in research and business / rental, \$850 to \$945 monthly; purchase, \$32,500

Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia, Pa. / Electronic computing equipment; large automatic digital computer UDEC; and built to order, small automatic digital computer, E101

COMPUTER CONTROL CO., INC., 92 Broad St., Wellesley, Mass. / Special Purpose Digital Computers / - / USE: process control, quality control, selection system for photographic library, production tabulation, numerical machine control, high speed computation / -

COMPUTING DEVICES OF CANADA, LTD., P. O. Box 508, Ottawa, Ont., Canada / Custom built digital computers

Datamatic Corp., 151 Needham St., Newton Highlands 61, Mass. / Electronic computer systems for general accounting and data processing operations, and for general scientific applications

DATA PROCESSING ASSOCIATES, LTD., 1313 Wellington St., Ottawa, Canada / Electronic Digital and Analog Computing Equipment / DESC: Digital and analog computer systems, data reduction systems, application and installations services, consulting services, maintenance and field personnel, Canadian representatives for: ElectroData Corp. (DATATRON), Mid-Century Instrumatic Corp. (Analog), Telecomputing Corp. (data reduction), Tally Register Corp. (Plotters), Dian Laboratories (analog computing services), research and development, laboratory facilities / USE: scientific and business uses / -

ELECTRO DATA CORP., 460 Sierra Madre Villa, Pasadena, Calif. / DATATRON automatic digital computer and auxiliary electronic data processing machines / DESC: 4,000 words magnetic drum storage, 80 additional words quick-access drum storage; 10 decimal digits and sign; paper tape, CARDATRON complete alpha-numeric punch card operation, DATAREADER magnetic tape, four million words auxiliary storage / USE: business applications, mathematical, scientific, engineering computation / \$140,000 to \$250,000 approx. or lease with option to buy

Electronic Computer Div., Underwood Corp., 35-10 36th Ave., Long Island City 6, N. Y. / six types of electronic digital computers (ELECOM "50", 100, 120A, 125, 200 and a data handling computer)

ELECTRONIC CONTROL SYSTEMS, INC., 2138 Westwood Blvd., Los Angeles 25, Calif. / "Digimatic" High Speed Digital Computer / DESC: can interpolate blue print data, put this data on magnetic tape, instruct the machine tool to automatically mill the designated piece. Makes use of playback commands through a servomechanism / USE: automation of machine tools / -

Elliott Bros. (London) Ltd., Century-Works, Lewisham, London, S.E. 13, England / Elliott 402, 403, electronic digital computers

The English Electric Export & Trading Co., Ltd., 23 Beaver St., New York 4, N. Y. / DEUCE High Speed Electronic Computer / DESC: adds, subtracts, multiplies, divides under full automatic control. Binary serial mode, using mercury delay lines and magnetic drum storage. Punched card input and output / USE: general purpose / -

FERRANTI ELECTRIC, INC., 30 Rockefeller Plaza, New York 20, N. Y. / Packaged Computer EPC-1 / DESC: medium-size general purpose machine;

### Products and Services

magnetic drum main store, capacity of 4096 words of 39 bits each; bit rate, 300 KC; multiplication, 2 milliseconds; division, 5 milliseconds; machine constructed of standard plug-in packages which may be readily replaced for maintenance; modified single address code with comprehensive range of orders; punched tape input and output; extensive range of programs and subroutines are available / USE: scientific, engineering, and business applications / \$150,000

**FERRANTI ELECTRIC, INC., \*a** / Mercury / DESCRIPTOR: high speed general purpose machine with automatic floating point operation; magnetic core computing store (rapid memory), capacity 40,960 bits; magnetic drum main store (intermediate memory), capacity 650,000 bits; additional delay line B registers for modification of instructions; add time, 180 microseconds; multiply time, 300 microseconds; comprehensive library of routines available / USE: scientific engineering, business computing / \$350,000

Hughes Research and Development Laboratories, Culver City, Calif. / small powerful automatic electronic digital computers for airborne use

**INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. and elsewhere** / IBM Card-programmed Electronic Calculator / composed of 4 IBM machines: an electronic calculator capable of 2,174 additions and subtractions a second; an accounting machine (tabulator); a storage unit; a card punch / USE: in scientific or commercial problems requiring any number of sequential steps to obtain each single answer / typical monthly rental, \$1,600 to \$2,000

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 604 Electronic Calculating Punch** / DESCRIPTOR: speed of 6,000 cards per hour; up to 60 separate program steps to solve a computing problem for one card; uses 1400 electronic tubes / USE: in science, engineering and business / monthly rental, \$550 up

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 607 Electronic Calculator** / DESCRIPTOR: larger version of the IBM 604; able to perform and check 14,000 operations a minute; memory of intermediate calculated results, not only original data in solving a problem / USE: to handle in one operation the majority of commercial or scientific calculations ordinarily requiring multiple machine operations / monthly rental, \$800 to \$1850

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 608 Transistor Calculator** / DESCRIPTOR: contains over 3,000 transistors, which make possible a 50% reduction in computer-unit size and a 90% reduction in power needs over a comparable IBM vacuum-tube model calculator; can perform 4,500 additions a second; magnetic core internal storage / USE: to handle commercial and scientific problems, many of greater size and complexity than those handled by 604 and 607 / monthly rental, \$2,250

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 650 Magnetic Drum Data Processing Machine** / DESCRIPTOR: four units are: magnetic drum storage unit, electronic calculating unit, console, input and output unit; up to 20,000 alphanumeric characters of storage for data and operating instructions; available with magnetic tape input-output, magnetic core storage, and printer output / USE: for accounting and computing problems of intermediate size / monthly rental \$3,250 up

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 701 Electronic Data Processing Machine** / composed of 11 connected units; cathode ray tube; magnetic drum and magnetic tape storage devices; can perform 14,000 mathematical operations a second / USE: for scientific computing, for rapid performance in such fields as aviation, atomic energy and ordnance / monthly rental about \$15,000

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 702 Electronic Data Processing Machine** / can perform more than 10 million operations an hour; essential components are an arithmetical and logical unit, a control console, magnetic tape units, a card reader, a printer and a card punch; the magnetic tape units, card readers, card punches and line printers may be coupled directly to one another to provide separate and independent card-to-tape conversion, tape-to-card conversion, and tape-to-printer operation / USE: data processing in manufacturing, insurance, banking, etc. / monthly rental typically \$15,000 to \$25,000

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 704 Electronic Data Processing Machine** / about 7 to 20 times more powerful than the IBM 701 in handling typical problems; composed of connected units; utilizes 3 electronic storage devices, also magnetic cores, magnetic drums and magnetic tapes / USE: primarily for engineering applications / typical monthly rental, \$22,000 to \$27,000

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 705 Electronic Data Processing Machine** / like the IBM 702; has 20,000 positions of magnetic core storage allowing longer and more complete programs to be held entirely in main memory / USE: for handling business problems / monthly rental, typically \$25,000 to \$30,000

**Jacobs Instrument Co., Bethesda, Md. / JAINCOMP Digital Computers** / DESCRIPTOR: compact, high-speed digital computers for both general purpose business use and for real time (control) applications / USE: in business and in real-time (control) / varies, depending on requirements

**LABORATORY FOR ELECTRONICS, INC., 75 Pitts St., Boston 14, Mass. / DIANA magnetic drum data processing machine** / DESCRIPTOR: General purpose, stored-program computer; variable word, block and record lengths. Magnetic cores and high speed drum for immediate access memory and programs. Magnetic drums (any number) for bulk storage; each drum stores approximately 2,000,000 alphanumeric characters; 1/6 second random access to entire file. Paper and magnetic tape, punched card, and typewriter inputs; same outputs plus line printer. Scalable capacity. / USE: general purpose, with special emphasis on applications requiring extensive quick random access / price varies with capacity; \$500,000 range

#### Computers and Automation

LABORATORY FOR ELECTRONICS, INC., \*a / TIM magnetic drum data processing machine / DESCR: medium priced general purpose stored-program computer utilizing random access magnetic drums exclusively for bulk storage; numeric information only; 750,000 decimal digits per drum; up to 10 drums; variable word length, adjustable record length; input from punched cards, tags, tape, or directly from keyboard; output via typewriter, paper tape, punched card / USE: account posting, particularly in inventory control and deposit accounting / \$60,000 to \$200,000

LIBRASCOPE, INC., 808 Western Ave., Glendale 1, Calif. / LGP-30 General Purpose Computer / DESCR: mobile, desk-size automatic electronic digital computer; 4096 word drum memory; simplified command structure / USE: for solution of large scale problems at medium speed; particularly scientific applications / about \$29,800

LITTON INDUSTRIES, 336 N. Foothill Dr., Beverly Hills, Calif. -- see "Digital Differential Analyzers"

LOGISTICS RESEARCH, INC., 141 S. Pacific Ave., Redondo Beach, Calif. / Electronic, General Purpose, Digital Computer: ALWAC III-E / DESCR: drum computer, decimal alphabetic, hexadecimal; adds, subtracts, multiplies, divides; calculates, organizes, makes logical decisions; 8192 word storage; problems of any complexity, in any sequence; flexowriter, high speed reader, card converter, magnetic tape, motorized punch, teletype punch; very reliable / USE: business, industrial, financial, governmental problems / \$48,000, plus auxiliary units

Merchant Research, Inc., 1475 Powell St., Oakland 8, Calif. / electronic digital computers (including Miniac)

Merchant Research, Inc., subsidiary, Merchant Calculators, Inc., 1475 Powell St., Oakland 8, Calif. / Merchant MINIAC Data Processing System / DESCR: System includes: magnetic typewriter; magnetic tape capsules; capsule handler; tape information processor; MINIAC computer; control console; line printer. Capable of sorting, merging, collating, summarizing a plurality of magnetic tapes simultaneously, while MINIAC is performing complex computations. Tape data may be of completely variable length / USE: complete inventory control, insurance bookkeeping and billing, general data processing, etc. / -

The W. L. Maxson Corp., 460 West 34th St., New York 1, N. Y. / digital computers for fire control, navigation, etc.

MONROE CALCULATING MACHINE CO., (Monrobot Laboratory), Orange, N. J. / Electronic Calculator (Monrobot VI) digital electronic calculator; double arithmetic processing units; equipped with Monroe "Automatic Internal Diagnosis" of errors; magnetic drum, capacity 100 numbers of 20 decimal digits with algebraic sign, and 200 orders; data and programs entered by manual keyboard or perforated tape; result printed on electric typewriter or produced on perforated tape; contents of magnetic

drum may be transferred to perforated tape or vice versa / USE: engineering and commercial calculation / -

MOUNTAIN SYSTEMS, INC. — see "Data Processing Machines"

THE NATIONAL CASH REGISTER CO., ELECTRONICS DIV., 3348 West El Segundo Blvd., Hawthorne, Calif. / Digital Computers / CRC 102-A and 102-D general purpose computers and other computers

THE NATIONAL CASH REGISTER CO., Dayton 9, Ohio / National 102-D / DESCR: binary coded-decimal automatic electronic digital computer; magnetic drum memory; Flexowriter or punched card input-output or both; memory capacity 1024 words; average access time 12.5 milliseconds / - / \$65,000 up

NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. / Circle Computer designs and sales

NUCLEAR DEVELOPMENT CORP. OF AMERICA, \*a / Special Purpose Computers / design and construction of computers to meet specific scientific, industrial, commercial, computing, and data handling problems / - / -

PHILCO CORP., Government & Industrial Div., Philadelphia 44, Pa. / TRANSAC Electronic (Digital) Computers / DESCR: employs Philco direct-coupled transistors and techniques throughout, thus eliminating numerous components familiar in vacuum tube techniques; printed circuit cards are employed as structures on which the transistors are directly mounted, and serve as plug-in units, to simplify assembly and facilitate maintenance / USE: TRANSAC arithmetic units are for use as the core of any modern computer design, to improve reliability, durability and speed, to reduce size, weight, cost and power consumption, and to eliminate periodic replacement of deteriorating components / \$25,000 to \$500,000

Radio Corp. of America, RCA Victor Div., Camden, N. J. / Digital computers and data processing systems for business applications. Bizmac

RAMO-WOOLDRIDGE CORP., 5740 Arbor Vitae, Los Angeles, 45, Calif. / Digital computers and components

J. B. Rea Co., Inc., 1723 Cloverfield Blvd., Santa Monica, Calif. / READIX Digital Computer / DESCR: decimal, serial, single address machine with both fixed point and floating point operation; magnetic drum storage capacity of 4,000 words; each word 10 decimal digits with sign or two commands complete with addresses / USE: scientific, engineering, and data processing / \$79,000

REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., 315 4th Ave., New York 10, N. Y. / The Univac System and Univac II / DESCR: large scale general purpose digital electronic computing system; built-in self-checking features; employs a single address system and 1000 words of mercury delay line storage in Univac I; 2,000 up to 10,000 words of magnetic-core storage in Univac II; magnetic tape units provide supplementary storage and fast input-output facilities; operate on stored pro-

### Products and Services

grams employing 63 instructions and 45 different arithmetic and logical operations; auxiliary equipment for data conversion; processed data put out in printed form, punched cards, or punched tape / USE: scientific, commercial, business, industrial, government, etc. / -

REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., 1902 Minnehaha Ave., St. Paul W4, Minn. / Univac Scientific Computer Model 1103A / general-purpose digital computer; two address logic, large storage capacity, high operating speed, versatile programming; 16,384 magnetic-drum registers, 4096 magnetic-core registers; all registers individually addressed, directly accessible; internally stored programs capable of self-modification; 41 different arithmetic and logical operations; parallel computation on words of 36 binary digits; optional features and equipment are: floating-point, additional magnetic-core storage for 12,288 words, ten magnetic-tape units with variable format feature for supplementary storage and input-output, 600 line a minute printer, off-line and on-line operation / USE: scientific, engineering, computing / \$895,000; available on rental basis approximately \$21,000 a month

REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., 315 4th Ave., New York 10, N. Y. / Univac File Computer Systems / DESCRIPTOR: capacity of 1,800,000 digits or characters of internal storage file information; up to 31 input-output devices may be connected to the system for simultaneous "online" service; programming may be done externally by a changeable control panel; internally by stored program or a combination; external program is non-sequential; magnetic drum general storage unit for data, program step instructions, or both; random access type, 2 size drums available / USE: commercial accounting purposes with large amounts of data but relatively short computations / \$2085 to \$17,000 monthly rental; \$125,000 to \$1,020,000 sale; prices subject to tax

REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP. -- see "Data Processing Machines"  
SERVO CORP. OF AMERICA, 20-20 Jericho Turnpike, New Hyde Park, L. I., N. Y. / Digital computers

Société d'Electronique et d'Automatisme, 138 Blvd. de Verdun, Courbevoie, Seine, France / Digital computers and components. General purpose digital computer CAB 2.022

SOROBAN ENGINEERING, INC., Box 117, Melbourne, Fla. / Electronic digital computers of the FLAC and SEAC type

STROMBERG-CARLSON-SAN DIEGO, 1895 Hancock St., San Diego, Calif. / Computer Read-Out / DESCRIPTOR: a digital computer read-out system capable of operating at writing speeds in excess of 10,000 characters per second; presents alphanumeric and graphic information on photographic film in response to digital input information / USE: recording output of digital computer / less than \$100,000

SYLVANIA ELECTRIC CO., Waltham Laboratories, Waltham, Mass. / Large electronic digital computers on contract

TECHNITROL ENGINEERING CO., 2751 N. 4th St., Philadelphia 33, Pa. / Digital computers and data processing machines / DESCRIPTOR: composed of computer "blocks" used in construction of digital computers and data processing machines / USE: data processing; special and general purpose computers; modifications, additions, and duplications to existing non-standard digital computers are a specialty / \$10,000 to \$500,000

THE TELEREGISTER CORP., 445 Fairfield Ave., Stamford, Conn. / Digital special purpose computers as a component of complete data processing systems

Vectoron, Inc., 1605 Trapelo Rd., Waltham 54, Mass. / special computers for military applications, etc. Wallind-Pierce Corp., 1928 Pacific Coast Highway, Lomita, Calif. / Digital computers

Wang Laboratories, 37 Hurley St., Cambridge, Mass. / Electronic Digital-Analog Differential Computer (Wedilog) / - / USE: as a digital computer / \$19,500 and up

K. G. ZUSE, Kreis Hünfeld, Neukirchen, Germany / Electronic Digital Computers / DESCRIPTOR: small size; stored program; magnetic drum main storage; output in printed form / USE: for general and special purpose / \$40,000 to \$50,000

### 21. DIGITAL-TO-ANALOG CONVERTERS

ACF ELECTRONICS, INC., 800 No. Pitt St., Alexandria, Va. / ACF Model 1002 Decoder / DESCRIPTOR: All-electronic, rack-mountable converter providing rapid, precise, and dependable conversion of digital data to analog voltages. Unit capable of accepting up to 200,000 ten-bit binary codes per second with a precision one part in 1024. / USE: applications in digital computing systems or data transmission links / \$950

Kearfott Co., Inc., Clifton, N. J. / Digital-to-analog converters

Wallind-Pierce Corp., 1928 Pacific Coast Highway, Lomita, Calif. / Digital-to-analog converters

### 22. DIODES (Computer Types)

FEDERAL TELEPHONE AND RADIO CO., DIV. OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORP., 100 Kingsland Rd., Clifton, N. J. / Power rectifiers - Selenium, Silicon and Germanium stacks

INTERNATIONAL RECTIFIER CORP., 1521 Grand Av., El Segundo, Calif. / Germanium diodes, selenium diodes; silicon diodes; selenium photo-cells; selenium sun batteries; selenium rectifiers; germanium rectifiers; silicon rectifiers

National Fabricated Products, 2650 Belden Ave., Chicago 47, Ill. / Diodes: silicon type

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#### Computers and Automation

National Semiconductor Products, 930 Pitner Ave., Evanston, Ill. / Silicon Junction Diodes / very rugged, hermetically sealed, silicon alloy junction diodes; back resistances in excess of 100 megohms at 100° C; good to moderate forward conduction / \$2.00 to \$13.00

PHILCO CORP., Philadelphia, 44, Pa. / X-Band Mixer Diode / Hermetically sealed point contact germanium type / USE: wide band mixer applications / -

RADIO RECEPTOR CO., INC., 251 W. 19th St., New York, N. Y. / Germanium Diodes / DESCRIPTOR: high conductance, gold bonded, hermetically sealed glass diodes / USE: transistor biasing, receiving equipment, computers, magnetic amplifiers, and other applications / -

RAYTHEON MANUFACTURING CO., Receiving and Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass. / Transistors, Semiconductor Diodes / DESCRIPTOR: silicon and germanium transistors, silicon power diodes / USE: computer and related uses / -

SYLVANIA ELECTRIC CO., 1740 Broadway, New York 19, N. Y. / Electronic Tubes, Diodes, Transistors / DESCRIPTOR: Semiconductor diodes and transistors, vacuum tube type diodes, amplifying electronic tubes / USE: in clipping, clamping, gating, and pulse amplifier circuits / \$1 to \$5

SYLVANIA ELECTRIC PRODUCTS, 100 Sylvan Rd., Woburn, Mass. / Diodes

Transistor Products, Inc., 241 Crescent St., Waltham 54, Mass. / Diodes

#### E

#### 23. ELECTRIC TYPEWRITERS, CONTROLLED

American Automatic Typewriter Co., 2323 No. Pulaski Rd., Chicago 39, Ill. / Autotypist / Pneumatically controlled, automatic, selective typing equipment

Benson-Lehner Corp., 2340 Sawtelle Blvd., Los Angeles 64, Calif. / Electrotypewriter (Model B) / Modified IBM typewriter with various keys solenoid-operated for remote operation / - / \$850

Commercial Controls Corp., One Leighton Ave., Rochester 2, N. Y. / Flexowriters / DESCRIPTOR: electric typewriting machine, standard electric keyboard, code selector, code translator, tape punch, and tape reader, all integrated in one machine; will punch, read, duplicate, correct paper tape; 5, 6, 7, 8 channels optional / USE: to prepare documents at the source, and produce as a by-product punched tapes with complete selected information; the tapes in turn are used to actuate other tape operated machines, such as communications equipment, address plate embossing machines, tape-to-card punches, computers, etc. / \$1800 to \$3000

ELECTRODATA CORP -- see "Digital Computers"

FRIDEN CALCULATING MACHINE CO., INC., San Leandro, Calif. / Friden Computypewriter, Model A / DESCRIPTOR: high speed, desk-top computing and tab-

ulating machine for applications requiring routine addition, subtraction and multiplication, with automatic tabulation of results; comprised of standard automatic Friden Calculator, IBM Electric typewriter, and Control Circuit / USE: statistical tabulations, cost distributions, pro-rating, schedules, etc. / \$4250

FRIDEN CALCULATING MACHINE CO., INC., \*a / Friden Computypewriter, Model B / DESCRIPTOR: Automatic billing machine combining electric typewriter and fully automatic calculating mechanism. Computypewriter, operated by a typist, automatically figures and prints all extensions, taxes, charges, discounts, and net total, automatically tabulating, printing decimals, and rounding off to the nearest full cent wherever necessary / USE: may be programmed to fulfill any typing and calculating requirement / \$4500

INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. / IBM 884 Typewriter Tape Punch / DESCRIPTOR: creates a punched tape simultaneously with the typing operation / USE: these tape perforations control the IBM Tape-to-Card Punch for automatic conversion to punched cards / monthly rental, \$75

INTERNATIONAL BUSINESS MACHINES CORP., \*a / Typewriter Card Punch (Types 824, 826) / DESCRIPTOR: types documents and punches cards simultaneously; consists of 2 units, an IBM electric typewriter and a card punch, either printing or non-printing / - / monthly rental, \$90 to \$125

Robotypewriter Corporation, 125 Allen St., Hendersonville, N. C. / Automatic typing equipment that can be associated with any electric typewriter, using a record roll pneumatically operated

SOROBAN ENGINEERING, INC., Box 338, Melbourne, Fla. / Automatic Tabulators / DESCRIPTOR: specialized coding and de-coding devices / USE: in control of electronic tabulators and similar printing devices / - / \$1600 to \$4900

Telequipment Corp., Sea Cliff, N. Y. / Common Language Coder / Attachment for electric typewriter for preparation of perforated or magnetic carbon tape / - / \$850

UNDERWOOD CORP., 1 Park Ave., New York 16, N. Y. / Electric typewriters, used with computers

UNDERWOOD CORP., \*a / Underwood Servotypewriter / DESCRIPTOR: controlled electric typewriter; keys are operated by solenoids triggered by electrical signals / USE: automatic recording of digitized and alphabetic data / -

#### 24. ELECTRONIC TUBES (Computer Types)

GENERAL ELECTRIC CO., Tube Dept., 1 River Rd., Schenectady 5, N. Y. / G. E. Computer Tubes / DESCRIPTOR: Type 5844, 5965, 6211, 6463 twin-triodes, 5915-A dual control heptode, 6525 thyratron / USE: counters, amplifiers, coincidence gating, frequency-dividers, core-drivers, etc., in moderately fast to extra-fast computers / -

GENERAL ELECTRIC CO., Tube Dept., \*a / G. E. Five-Star Computer Tube / DESCRIPTOR: 6829 twin-

### Products and Services

triode / USE: developed to meet highly specialized and unusual requirements of airborne computers  
**RAYTHEON MANUFACTURING CO.,** Receiving and Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass. / Electron Tubes / DESCR: miniature and subminiature tubes, low drain filamentary subminiature tubes, other special tube types / USE: computer and related uses / -

**SYLVANIA ELECTRIC CO.,** 1740 Broadway, New York 19, N. Y. / Electronic Tubes / DESCR: vacuum tube type diodes, amplifying electronic tubes / USE: in clipping, clamping, gating, and pulse amplifier circuits / \$1 to \$5

### F

#### 25. FIRE CONTROL EQUIPMENT

**Farrand Optical Co.,** Bronx Blvd. and 238th St., New York 70, N. Y. / Gunfire control apparatus, range-finders, optical and electronic sighting equipment, automatic trackers, infrared search and scanning systems

**FORD INSTRUMENT CO., DIV. OF SPERRY RAND CORP.,** 31-10 Thomson Ave., Long Island City 1, N. Y. / Gunfire control apparatus; analog computers and components, missile guidance systems, magnetic amplifiers, servo motors, differential and integrator elements, instruments for shipborne and airborne armament and navigational control; nuclear reactors, computers, systems, drives, and precision components

**Reeves Instrument Co.,** 215 East 91st St., New York 28, N. Y. / Fire control equipment

### I

#### 26. INFORMATION RETRIEVAL

**ZATOR COMPANY,** 79 Milk St., Boston 9, Mass. / Zatocoding System / DESCR: a digital technique for indexing scientific information and retrieving it by use of a card sorting machine; equipment and professional supervision for setting up and maintaining Zatocoding System also provided / USE: for retrieval of scientific reports and literature in collections of 1,000 items and up / monthly rental \$45 plus initial \$500 professional installation charge

### K

#### 27. KEYBOARDS

**Benson-Lehner Corp.,** 2340 Sawtelle Blvd., Los Angeles 64, Calif. / Serial Input Keyboard (Key-pak) / Serial input keyboard to suit the customer's requirements; various outputs from the keyboard, such as decimal, binary coded decimal, etc. /

USE: serial digital input / \$100 to \$250  
**SOROBAN ENGINEERING, INC.,** Box 338, Melbourne, Fla. / Coding Keyboards / DESCR: specialized and custom-made keyboard units for use in automatic control applications / - / \$390 to \$850

### L

#### 28. LINE-A-TIME PRINTERS

**ANELEX CORP.,** 150 Causeway St., Boston 14, Mass. / ANelex Synchroprinter / DESCR: electromechanical, high-speed, line printer; up to 56 character selection; length of line up to 20 columns; columns, 5 or 10 per inch; speed, 15 lines or more per second. New production models range from 24 to 120 columns / USE: to transform computer outputs (via pulses, tapes, cores, etc.) to usable printed form / -

**CONTROL INSTRUMENT CO., INC.,** 67 35th St., Brooklyn, N. Y. / 900-line per minute tabulator

**POTTER INSTRUMENT CO., INC.,** 115 Cutter Mill Rd., Great Neck, N. Y. / Flying Typewriter, Magnityper / DESCR: High-speed line-at-a-time printers using magnetic core or Magnistor storage; available in 20, 40, 60, 80, 100 or 120 column sizes. Printing rates: alphanumeric, 10 lines per second; numeric, 15 lines per second / USE: digital computer output data processing systems / \$40,000 to \$50,000

**SHEPARD LABORATORIES,** 480 Morris Ave., Summit, N. J. / High Speed "TYPER" / DESCR: operates at speeds up to 15 lines per second, printing 120 characters per line, for Alpha-Numeric information or 30 lines per second for numerical information only; will produce up to 6 useable copies / USE: as output for modern computer through the media of tape or cards, for banking, inventory, accounting, billing, etc. / -

#### 29. LOGICAL CIRCUITS (For Digital Computers)

**American Machine & Foundry Co., Electronics Div.,** 1085 Commonwealth Ave., Boston 15, Mass. / Logical circuits

**Burroughs Corp., Electronic Instruments Division,** 1209 Vine St., Philadelphia, Pa. / Pulse control equipment / DESCR: a line of matched pulse units each performing a basic logical function; pluggable connections / USE: construction of logical circuits

**COMPUTER CONTROL CO., INC.,** 92 Broad St., Wellesley, Mass. — see "Arithmetical Circuits"

**Librascope, Inc.,** (formerly The Minnesota Electronics Corp.), Burbank Div., 133 E. Santa Anita Ave., Burbank, Calif. / Magnetic DECISION Elements / DESCR: magnetic digital computing components expressing logical properties; long life, reliable, speeds up to 100 kilocycles, low power consumption; small, light packages; require a minimum of vacuum tubes (used only to generate pulse power)

### Computers and Automation

/ USE: connected directly from logical diagrams into operating arithmetical or control circuits with minimum of design engineering; combination packages include counters, adders, accumulators, control circuits, delay lines, storage registers, synchronizing and timing circuits / sold as components or with custom-designed equipment  
MONROE CALCULATING MACHINE CO., ELECTRONICS DIV., Hanover Av., Morris Plains, N.J.  
/ Logical circuits

### M

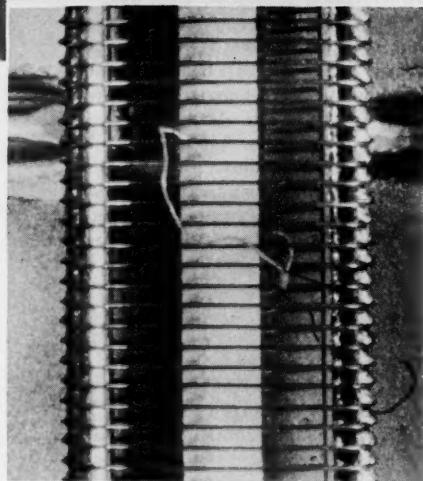
#### 30. MAGNETIC CORES (Computer Types)

Alden Products Co., 114 No. Main St., Brockton, Mass. / Magnetic storage cores; toroidal core winding, etc.  
THE ARNOLD ENGINEERING CO., Marengo, Ill. / Magnetic cores and other magnetic material for computer components, etc.  
Burroughs Corp., Electronics Instruments Div., 1209 Vine St., Philadelphia, Pa. / Magnetic cores / DESCRIPTOR: tape wound cores for logical elements / USE: logical elements in control and information handling systems /  
Datamatic Corporation, 151 Needham St., Newton Highlands 61, Mass. / Magnetic cores / DESCRIPTOR: magnetic-core coincident-current matrix memory systems; magnetic shift registers; binary and decade counters; magnetic core logical components and subsystems  
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / Magnetic core storage elements / USE: frequency or pulse rate transformations  
FERROXCUBE CORP. OF AMERICA, East Bridge St., Saugerties, N.Y. / Ferrite core materials, including pot cores, cup cores, recording heads, and microminiature toroids with square hysteresis loop; Magnadur permanent magnet materials  
GENERAL CERAMICS CORP., Keasbey, N.J. / Ferrites and Technical Ceramics / Ferrites for magnetic cores, memories, toroids, transformers, antennas, etc.; Technical Ceramics for insulation and seals; Magnetic Memory Cores, Magnetic Memory Planes, standard and custom wired; Ferrites for pulse transformer and recording heads for computer components; Ferrite Cores; Technical Ceramics, Insulators, etc. / - / price variable  
Magnetics, Inc., Box 230, Butler, Pa. / Metallic cores of high magnetic permeability  
MONROE CALCULATING MACHINE CO., ELECTRONICS DIV., Hanover Ave., Morris Plains, N.J. / Magnetic cores  
POTTER INSTRUMENT CO., 115 Cutter Mill Rd., Great Neck, N.Y. / Magnetic core memory, random access memory  
SPRAGUE ELECTRIC CO., 377 Marshall St., North Adams, Mass. / Magnetic shift registers  
TELEMETER MAGNETICS, INC., 11801 Mississippi Ave., Los Angeles 25, Calif. / Magnetic Cores,

Magnetic Storage Systems, Magnetic Core Grading and Testing Equipment, Special Purpose Data Processing Machines / DESCRIPTOR: ferrite cores with a wide range of characteristics; other ferrite configurations for use in digital computers; large-scale magnetic core storage systems for digital computers; buffer storage units for use in special data processing systems and as parts of input-output systems for computers / - / magnetic cores range from a few cents each; memory systems range from \$100,000 to \$500,000; buffer units are in the \$10,000 range

#### 31. MAGNETIC DRUMS

Brush Electronics Co., 3405 Perkins Ave., Cleveland, 14, Ohio / Tape Drum / DESCRIPTOR: rapid access high capacity magnetic memory using drum and tape / USE: for storing large volumes of data in inventory control and computing systems / \$20,000 up  
BRYANT GAGE AND SPINDLE DIVISION, Box 620, Springfield, Vt. / Magnetic Drums / DESCRIPTOR: Magnetic drums designed to purchasers' requirements. Air bearings or super-precision ball bearings; belt drive or integral motor drive; speeds up to 100,000 RPM; capacity up to 5,000,000 bits. Drum runout .0010" T.I.R. or less. Vertical or horizontal housing. Head mounting surfaces to suit. High density magnetic oxide or electro-plated magnetic alloy coating / USE: for semi-permanent storage of data in digital computers or as a delay line / \$800 up, depending on quantity and design  
Electronic Computer Div. of Underwood Corp., 35-10 36th Ave., Long Island City 6, N.Y. / Magnetic drums  
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / Magnetic Drum Memory System / High density storage systems, wide range of storage capacities; precision balanced drums, mounted on special bearings  
FERRANTI ELECTRIC, INC., 30 Rockefeller Plaza, New York 20, N.Y. / Rapid Access Magnetic Storage Drum (Type 200-B) / DESCRIPTOR: drum rotates at 23,000 RPM giving a maximum access time of 2-1/2 milliseconds; 20 heads provide 20 tracks, each with capacity of 1000 bits at a density of 160 bits per inch / USE: as buffer store, signal delay system, or storage for small computer / \$1425  
IMTRA CORPORATION, 58 Charles St., Cambridge, Mass. / Magnetic Storage Drums / DESCRIPTOR: for use with digital computers and data-processing systems. Mark II has a storage capacity of over 30,000 bits, with drum diameter 5 inches, depth 1.25 inches, and total weight about 11 pounds. Mark III has a storage capacity of over 250,000 bits, with drum diameter 5 inches, depth 8 inches, and total weight about 25 pounds / USE: computers / Mark II, \$500; Mark III, \$2,000  
LIBRASCOPE, INC., 808 Western Ave., Glendale 1, Calif. / Magnetic Drums / DESCRIPTOR: stock laboratory drums and stock and custom computer drums

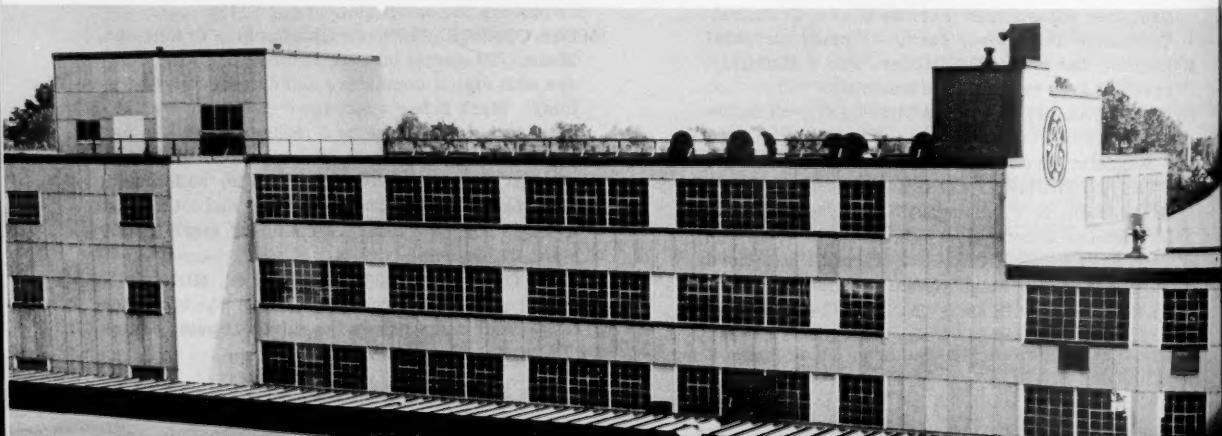


▲ LINT IS A TROUBLE-MAKER! The unretouched micro-photo above shows a strand of lint which easily can cause an inter-electrode short-circuit. Dust particles within a tube have the same harmful effect.

▲ MANUFACTURED "UNDER GLASS"! For optimum cleanliness, 6829's are assembled under glass-paneled protective hoods. All G-E employees who build 5-Star Tubes wear rubber finger cots, and their uniforms are lint-free Nylon and Dacron. These precautions are taken to ward off lint and dust, most frequent causes of intermittent tube "shorts".

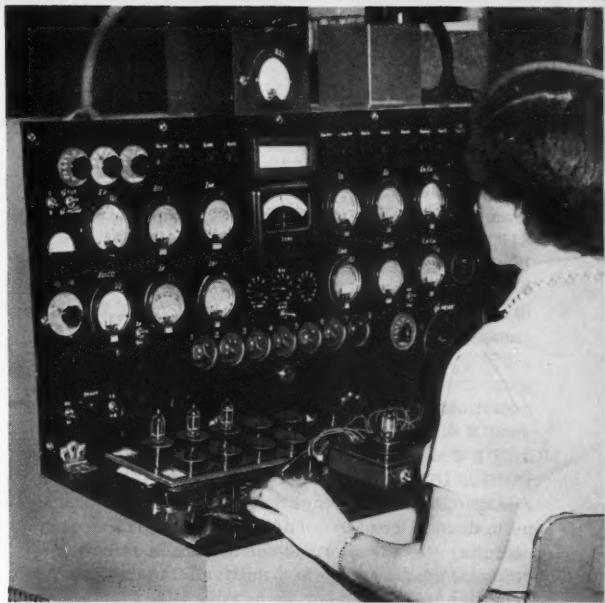
## FIRST GENERAL ELECTRIC 5-S HAS LINT-FREE MA

▼ 1200 WORKERS ASSEMBLE 6829's AND OTHER HIGH-RELIABILITY TUBES in this 5-Star building, located apart from the rest of G.E.'s Owensboro, Ky., tube factory. Because of the special white lintless uniforms, plus immaculately clean working conditions, "Operation Snow White" is aptly used to describe G-E 5-Star Tube manufacture. The entire assembly and inspection area is pressurized, with air that has been filtered, dehumidified and cooled.





▲ **SPECIALLY TESTED...BIASED TO CUT-OFF FOR LONG INTERVALS!** Life tests of G-E computer tubes under cut-off conditions, are made in order to be sure no "sleeping sickness", or failure to respond to grid input pulses, develops during inactivity. This is determined by means of periodic interface checks.



▲ **CHECKED FOR COMPUTER-SERVICE CHARACTERISTICS!** G-E computer tubes are specifically tested for those electrical qualities that closely affect tube operation in computer circuits. Among the characteristics checked are zero-bias plate current...cut-off performance...difference in cut-off between both triode sections.

# C 5-STAR COMPUTER TUBE E MANUFACTURE FOR ADDED RELIABILITY

**Shock-resistant design—comprehensive cut-off tests—further establish Type 6829  
as the most trustworthy tube you can apply in military computers!**

General Electric, first to design and build a new line of tubes for computers, now pioneers the first 5-Star high-reliability tube for computer circuits—analog and binary—where airborne, gunnery, or field-transport conditions call for resistance to mechanical shock and vibration.

Type 6829 has the many 5-Star design features that give added strength, such as a compact, sturdy tube cage...double mica spacers...a double-staked getter. In addition, tube assembly is carried on in immaculate surroundings free

from lint and dust, while special tests assure those electrical qualities that are essential in achieving computer dependability.

A 9-pin miniature, the 5-Star 6829 has similar characteristics to standard computer Type 5965. The new tube is designed for high-speed circuits—has high permeance, balanced, sharp cut-off qualities, and low heater power requirement (.45 amp).

Get the complete performance story! Write to *Tube Department, General Electric Company, Schenectady 5, New York.*

*Progress Is Our Most Important Product*

**GENERAL**  **ELECTRIC**

162-101

#### Products and Services

**LOGISTICS RESEARCH, INC.,** 141 S. Pacific Ave., Redondo Beach, Calif. / Magnetic Drums / DESCRIPTOR: 8192 or 4096 word capacity; also special drums from 1" to 4" dia., and 1/2" to 40" length. The 8192 word drum: 9-3/4" dia., 27-3/4" lgth., 44 lbs., 3480 rpm, 314 channels (28 recirc.), 740,000 bits (100 per in.). The 4096 word drum: 9-5/8" dia., 16-13/16" lgth., 35 lbs., 3450 rpm, 170 channels (25 recirc.), 390,000 bits (100 per in.) / USE: magnetic storage for ALWAC, or other computers / 8192 words, \$8000; 4096 words, \$5000; quotations or bids for design and production of special drums on request; tax, shipping, extra

**MONROE CALCULATING MACHINE CO., ELECTRONICS DIV.,** Hanover Ave., Morris Plains, N.J. / Magnetic Drum Storage Systems / DESCRIPTOR: magnetic drums, read/record heads, read & record circuits, & saturable transformer track selection circuits; capacities up to 2 million bits per drum, densities to 165 bits per inch, ruggedized for military use / USE: complete systems and separate components available / to \$30,000

**REMINGTON RAND UNIVAC DIV. OF SPERRY RAND CORP.,** 1902 W. Minnehaha Ave., St. Paul W4, Minn. / Magnetic Storage Drums / DESCRIPTOR: Digital drums: motor-driven, rapid-access, high-speed storage, record information in binary form. Analog drums: utilize boundary-displacement recording techniques / USE: The digital drums are used as memory units for electronic computers and data reduction systems. The analog drums have been used for recording of power-line transients, phase-shifting of signals, signal-to-noise enhancement, and voice recording / \$3780 to \$21,700 (prices without heads)

**TELEREGISTER CORP.,** 445 Fairfield Ave., Stamford, Conn. / Magnetic drums

**Wharf Engineering Labs.,** Fenny Compton, Warwickshire, England / Magnetic drums

#### 32.

#### MAGNETIC HEADS

**Brush Electronics Co.,** 3405 Perkins Ave., Cleveland 14, Ohio / Magnetic Heads / DESCRIPTOR: single channel heads of various sizes and characteristics; also multi-channel heads with varying track widths, spacings, etc., up to 22 channels in 2" block; 44 channels in 2" by interlacing / USE: memory storage devices; input-output systems / \$5 to \$500

**Datamatic Corp.,** 151 Needham St., Newton Highlands 61, Mass., / Magnetic heads

**THE DAVIES LABORATORIES, INC.,** 4705 Queensbury Rd., Riverdale, Md. / Multi-Track Magnetic Heads / DESCRIPTOR: Multi-track magnetic recording and reproducing heads for analog and digital recording; 7 to 20 tracks per inch, stacks up to 2 inches; shielded and potted / USE: magnetic tape and drum recording / price depends on type and number of tracks

**Electronic Computer Div. of Underwood Corp.,** 35-10 36th Ave., Long Island City 6, N.Y. / Magnetic recording heads

**LIBRASCOPE, INC.,** 808 Western Ave., Glendale 1, Calif. / Magnetic Heads MH 10A, MH10R-1 / DESCRIPTOR: drum read-record heads for critical applications, high output, fully adjustable, low record current / USE: with magnetic drums / \$33 to \$36

**LOGISTICS RESEARCH, INC.,** 141 S. Pacific Ave., Redondo Beach, Calif. / Read-Record Heads / DESCRIPTOR: Available for recording and reading both 8 and 16 channels per inch. 1-1/2" by 1/2" diameter; track width .050" and .100"; .003" gap width; gap material, brass; winding, 500 turns, center-tapped, or to spec's; wire size, #38 copper-formvar insulated; inductance, 20 mh.; D.C. resistance, 17.5 ohms; resonant frequency, 400 KC / USE: with magnetic drums of digital computing systems / 1 to 9, \$20 each; 10 to 99, \$15 each; 100 or more, \$10 each; tax, shipping, extra

**Merchant Research, Inc.,** 1475 Powell St., Oakland, 8, Calif. / Magnetic heads, magnetic storage equipment

**MONROE CALCULATING MACHINE CO., ELECTRONICS DIV.,** Hanover Ave., Morris Plains, N.J. / Magnetic Heads / DESCRIPTOR: read/record heads, read & record circuits, & saturable transformer track selection circuits / USE: with magnetic drums and in complete systems / -

**J.B. Rea Co., Inc.,** 1723 Cloverfield Blvd., Santa Monica, Calif. / Magnetic Recording Heads / DESCRIPTOR: cylindrical, 0.5 inch diameter, 2 inches long, nickel plated, four-pin plug; 8 to 11 millihenries, track width .094 inches / USE: in magnetic drum memory units for digital computer storage medium / \$25

**Wharf Engineering Labs.,** Fenny Compton, Warwickshire, England / Magnetic heads

#### 33. MAGNETIC STORAGE SYSTEMS (see specifically MAGNETIC CORES, MAGNETIC DRUMS, MAGNETIC TAPE)

**Jacobs Instrument Co.,** 4718 Bethesda 14, Maryland / magnetic storage systems

**LIBRASCOPE, INC.,** 808 Western Ave., Glendale 1, Calif. / Magnetic Storage Systems / DESCRIPTOR: designed around Librascope standard magnetic drums and read record heads; development of special logic circuitry / -

**LOGISTICS RESEARCH, INC.,** 141 S. Pacific Ave., Redondo Beach, Calif. / Magnetic Tape Auxiliary Storage; 2400 ft. of 1/2 inch tape, 7 tracks; 5th track for parity checks / DESCRIPTOR: 10,000 characters per second; search, read or write; 500" per second rewind; 2,000,000 decimal digits per reel; start, stop, 20 ms; buffer has 32 word capacity, each 32 bits plus sign; system is able to control 16 individual handling units / USE: data storage in conjunction with computer / tape unit, \$10,000; buffer, \$13,000; tax, shipping, extra

**MONROE CALCULATING MACHINE CO., ELECTRONICS DIV.,** Hanover Ave., Morris Plains, N.J. / Magnetic Drum Storage Systems — see "Magnetic Drums"

### Computers and Automation

POTTER INSTRUMENT CO., INC., 115 Cutter Mill Rd., Great Neck, N. Y. / Random Access Memory (RAM) / DESCRIPTOR: three-dimensional data storage device; 0.5 second access to digital data stored in any of 100,000 or 1,000,000 locations (200 alpha-numeric characters per location) / USE: computer file storage, list processing, business applications / \$50,000

TELEMETER MAGNETICS, INC., 11801 Mississippi Ave., Los Angeles 25, Calif. / Magnetic Storage Systems / DESCRIPTOR: large scale magnetic core storage systems for digital computers; also buffer storage units for use in special data processing systems and as parts of input-output systems for computers / - / memory systems range from \$100,000 to \$500,000; buffer units are in the \$10,000 range

#### 34. MAGNETIC TAPE

Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y. / magnetic tape, guaranteed free of defects  
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio / magnetic tape

#### 35. MAGNETIC TAPE HANDLERS (see also MAGNETIC TAPE RECORDERS)

Armour Research Foundation, Illinois Inst. of Technology, 10 West 35th St., Chicago 16, Ill. / magnetic recording

Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio / Datacord / DESCRIPTOR: High speed tape transport with fast start, stop and reverse / USE: in digital computers and for data storage / \$2,000 to \$10,000

Datamatic Corp., 151 Needham St., Newton Highlands 61, Mass. / magnetic tape handling mechanisms

ELECTRODATA CORP., 460 Sierra Madre Villa, Pasadena, Calif. / Datareader magnetic tape transport unit / DESCRIPTOR: 2400 ft. of 1/2" or 3/4" tape on reels, 6 millisecond stop-start, 3 minute rewind, two-direction search; speeds up to 75 inches per second / USE: digital computer systems, data processing and telemetering systems, automatic control / \$7,900, approximately

Librascope, Inc., Burbank Div., (formerly The Minnesota Electronics Corp), 133 E. Santa Anita Ave., Burbank, Calif. / NOISERASER / DESCRIPTOR: magnetic tape demagnetizer / USE: removes saturation signals from tape and permits indefinite useful life of such tape with minimum of background noise; bulk-demagnetizes tapes and film used in telemetering recording, data processing and machine tool control

POTTER INSTRUMENT CO., INC., 115 Cutter Mill Rd., Great Neck, N. Y. / Magnetic Tape Handler / DESCRIPTOR: digital magnetic tape handler for multiple-channel record and playback applications; choice of speeds of 15, 30, 60, 75, and 100 inches per second / USE: storage device for digital computers

and other data-handling equipment / from \$3,000 up

#### 36. MAGNETIC TAPE RECORDERS (see also MAGNETIC TAPE HANDLERS)

AMPEX CORP., 934 Charter St., Redwood City, Calif. / Magnetic Tape Recorders / DESCRIPTOR: recording and reading equipment / USE: for computer input and output, for automatic data-reduction systems

ANELEX CORP., 150 Causeway St., Boston 14, Mass. / Micro-Tapestepper / DESCRIPTOR: Information from a code source triggers the tape-stepping mechanism. Packing density: 120 bits per inch. Tape is stationary between incoming pulses / USE: for use with data processing equipment, business machines, or any other equipment with a coded output / -

Audio Instrument Co., Inc., 133 West 14th St., New York 11, N. Y. / Model 301 Magnetic Tape Delay Unit / DESCRIPTOR: magnetic tape recorder-reproducer, using a loop of magnetic recording tape; provides one or two adjustable delay lines between 55 and 180 milliseconds long (other ranges on special order) / USE: to provide adjustable time delay as an element in an analog computing system / \$1,465

Avion Instrument Co., 299 State Highway No. 17, Paramus, N. J. / magnetic recorders

THE DAVIES LABORATORIES, INC., 4705 Queensbury Rd., Riverdale, Md. / magnetic tape data recorders / DESCRIPTOR: analog or digital data recording systems, airborne, portable, and laboratory types. Direct, RM, PWM, or digital pulse recording. Complete line of reproducing equipment, including automatic tape transports and automatic-switching electronic equipment for tape speed switching

### O

#### 37. OFFICE MACHINES (Computer Types) (see also specific kinds, such as Adding Machines, etc.)

THE NATIONAL CASH REGISTER CO., Dayton 9, Ohio / complete line of accounting machines / - / - / \$1120 to \$9975

THE NATIONAL CASH REGISTER CO., \*a / complete line of cash registers / - / - / \$260 to \$4595

### P

#### 38. PAPER TAPE FILING SYSTEMS

Visirecord, Inc., Copiague, L. I., N. Y. / filing systems for punched paper tape, etc.

#### 39. PAPER TAPE PUNCHES

ELECTRODATA CORP — see "Digital Computers"

### Products and Services

**FRIDEN CALCULATING MACHINE CO., INC.**, San Leandro, Calif. / Add-punch machine; automatic equipment for punching codes in tape; Computyper (a typewriter-billing machine, with many automatic functions. Model C. equipped with automatic tape punch, input and output)

**NATIONAL CASH REGISTER CO.**, Dayton 9, Ohio / National 461-2 paper tape recorder / DESCRIPTOR: creates 5, 6, 7, or 8-channel tape, in any known code; up to eight programs and as many as 38 digits of information in any single program segment / USE: for use with National cash registers, accounting machines and adding machines / prices start at \$1695 for 4-program recorder

**SOROBAN ENGINEERING, INC.**, Box 338, Melbourne, Fla. / Paper Tape Perforators / DESCRIPTOR: high speed paper tape perforators capable of 8 level perforations at speeds up to 240 characters per second / - / \$8750

**TALLY REGISTER CORP.**, 5300 14th Ave., N.W., Seattle, Wash. / numeric printing tape punch; printing transfer key punch

**Telequipment Corp.**, Sea Cliff, N.Y. / equipment for attaching to any electric typewriter so that it may produce punched paper tape simultaneously with typing

**Teletypesetter Corp.**, 2752 No. Clybourn Ave., Chicago 14, Ill. / tape perforators and operating units for local or distant automatic control of Linotypes and Intertypes

### 40. PAPER TAPE READERS

**Commercial Controls Corp.**, One Leighton Ave., Rochester 2, N.Y. / motorized paper tape reader / reads paper tape / USE: in conjunction with the Flexowriter / \$555 to \$560

**ELECTRODATA CORP.** — see "Digital Computers"

**FERRANTI ELECTRIC, INC.**, 30 Rockefeller Plaza, New York 20, N.Y. / High Speed Photoelectric Tape Reader / DESCRIPTOR: can read either 5 hole or 7 hole punched paper tape at speeds up to 200 characters per second; tape is stopped from full speed within a specified character; from rest position, within 6 milliseconds after an instruction, the next character can be read / USE: input from punched paper tape to high speed computer / \$1500

**FERRANTI ELECTRIC, INC.**, \*a / Tape Spooler / DESCRIPTOR: feed or take up of punched paper tape; width, between 11/16" and 1"; maximum reel diameter, 8"; maximum speed of tape with the Ferranti High Speed Tape Reader / \$245

**MONROE CALCULATING MACHINE CO.**, Orange, N.J. / paper tape readers

**POTTER INSTRUMENT CO., INC.**, 115 Cutter Mill Rd., Great Neck, N.Y. / Perforated Tape Reader / DESCRIPTOR: provides character reading speeds of 750, 600, 300, or 150 characters per second; full speed is achieved in 3 milliseconds, and tape stops on or before character following stop code (before next character at 300 characters per second); models

available for handling 5, 6, 7, and 8 level perforated tape / USE: digital computing and data-handling field / prices start at \$3,000

**SOROBAN ENGINEERING, INC.**, Box 338, Melbourne, Fla. / Paper Tape Readers / DESCRIPTOR: single and dual mechanical sensing paper tape reading devices capable of eight level reading up to speeds of 60 characters per second / - / \$650 to \$1150

### 41. PATCHCORDS

**AIRCRAFT-MARINE PRODUCTS, INC.**, ELECTRONICS DIV., 2100 Paxton St., Harrisburgh, Pa. / Patchcord Programming System / - / USE: for programming analog and digital computers, data processing equipment, etc.

**AIRCRAFT-MARINE PRODUCTS, INC.**, \*a / Patchcord Programming Systems and Boards / DESCRIPTOR: a complete system plus additional removable boards for incorporation with both digital and analog computers as well as test equipment / USE: programming circuits / \$298 to \$4200 each

### 42. PHOTOELECTRIC CARD READERS

**General Cybernetics Corp.**, P.O. Box 987, Beverly Hills, Calif. / Punched Card Feeder and Reader (Model 155 "Cybertac" System) / DESCRIPTOR: transports punched cards at speeds from 1 to 2,500 cards per minute past a photoelectric reading head; includes card trays, control panel, and mechanical drives / USE: for punched card conversion to another storage medium / \$5,500

**General Cybernetics Corp.**, \*a / Punch Card Reader Head / DESCRIPTOR: high speed photoelectric reader; 2500 cards per minute, consists of 26 photodiodes (1 stop, 1 start, 12 read, 12 monitor) / USE: in conjunction with high speed punch card feeder for converting to another storage medium for direct card input to a computer / \$300

**General Precision Laboratory**, 63 Bedford Rd., Pleasantville, N.Y. / Rapid electronic analysis of punch card data

### 43. PHOTOELECTRIC DECODING READERS

**CONTROL INSTRUMENT CO., INC.**, 67 35th St., Brooklyn, N.Y. / character recognition equipment / DESCRIPTOR: equipment reads numbers printed in non-special type and ordinary ink, using photoelectric scanner, on travellers checks or similar documents; automatically feeds and reads at rate of 120 documents per minute; simultaneously transcribes information read into tabulating card at the rate of one card per document / USE: transcribing ordinary printed data to some other medium such as tabulating card

**Intelligent Machines Research Corp.**, 1101 Lee Highway, Arlington, Va. / Devices for reading characters on paper, etc; pattern interpretation equipment

### Computers and Automation

The Kybernetes Corp., Div. of Self-Winding Clock Co., 1100 Raymond Blvd., Newark 5, N. J. / Devices employing high speed television techniques for: making printed coded characters on paper with automatically translatable coding; reading code and translating it into signals; sorting media carrying printed codes, etc.

THE STANDARD REGISTER CO., Dayton 1, Ohio / electronic equipment (called "Stonomic") capable of sensing or reading printed codes on business documents and translating them into digital pulses which will actuate office machines such as card punches, tape perforators, computers, etc.

#### 44. PHOTOELECTRIC TAPE READERS

ELECTRODATA CORP. — see "Digital Computers"

FERRANTI ELECTRIC, INC., 30 Rockefeller Plaza, New York 20, N. Y. — see "Paper Tape Readers"

POTTER INSTRUMENT CO., INC. — see "Paper Tape Readers"

45.

#### PHOTOGRAPHIC RECORDERS (COMPUTER TYPES)

INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. / Cathode Ray Tube Output Recorder (Type 740) / DESCRIPTOR: electronic output device designed for use with the IBM 701 or 704 provides an output which records data points on the faces of a pair of television-like tubes at the rate of 8,000 per second; larger tube is used for visual display; smaller tube is used in conjunction with a camera under control of the 701 or 704; camera automatically photographs information as directed by the program / USE: scientific, engineering, design problems

#### 46. PLOTTERS

Alden Electronic and Impulse Recording Equipment Co., Alden Research Center, Westboro, Mass. / Automatic curve plotters

American Machine & Foundry Co., Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass. / plotters

ANELEX CORP., 150 Causeway St., Boston, Mass. / Anelex Synchroplotter / DESCRIPTOR: electromechanical, high speed, line printer, which can plot actual finite function values with high resolution while at the same time printing the digital values / USE: presentation of final data for telemetered flight tests, etc.

Benson-Lehner Corp., 2340 Sawtelle Blvd., West Los Angeles 64, Calif. / plotters

Benson-Lehner Corp., \*a / Electropotters / DESCRIPTOR: take input from either punched tape or punched cards; display graphs on boards / USE: computer output / \$13,400 to \$22,000

CALIFORNIA COMPUTER PRODUCTS, 3927 West

Jefferson Blvd., Los Angeles 16, Calif. / Digital Incremental Plotter / DESCRIPTOR: Plots X-Y graphs in increments or steps of 1/100 inch upon receiving pulses from a digital differential analyzer / - / approximately \$1,000 to \$1,500

EDIN CO., INC., 207 Main St., Worcester, Mass. / Direct Writing Oscillograph Recorders and Hi-Gain D. C. Amplifiers / DESCRIPTOR: one to ten channels featuring combination ink and/or electric display; readily changeable chart speeds from 0.025 to 500 millimeters per second; folded chart paper, requires no rewind mechanism and is numbered by fold for indexing and filing; system sensitivity, less than one millivolt input produces 15 volts output at full gain; frequency response D. C. to 350 c. p. s. / USE: excellent for computer data read-out or related circuit / \$445 for single channel, \$2500 for 10 channels

ELECTRONIC ASSOCIATES, INC., Long Branch, N. J. / Variplotter, Model 205J / DESCRIPTOR: self-balancing potentiometer type recorder; a 4-pen (2 writing pens, 2 timing pens), 2-arm board enabling recording of 2 independent inputs of X versus Y with identified timing signals, simultaneously / USE: to record one variable d-c voltage as a function of a second variable d-c voltage / -

ELECTRONIC ASSOCIATES, INC., \*a / Variplotter, Models 205K and L / DESCRIPTOR: 205K is a single pen and arm board that will present a single plot of X vs Y; supplied with continuously variable uncalibrated scale factor and parallax controls for each axis; 205L is a 2-arm, 2-pen plotting board equipped with the same features as 205K and with separate scale factor and parallax panels for the pens; an automatic pen interchange system; an automatic pen lift circuit / USE: to record one variable d-c voltage as a function of a second variable d-c voltage, applied to servo amplifiers controlling the motion of the arm along the ordinate and the pen along the abscissa / 205K, \$6,500; 205L, \$10,000

ELECTRONIC ASSOCIATES, INC., \*a / Variplotter, Model 1100 / DESCRIPTOR: table top X-Y recorder in portable package; data plotted on 11" x 17" graph paper / USE: X-Y analog recorder; function generator of a single variable; with modification will plot digital information from punched cards or tape / \$2,000

ELECTRONIC ASSOCIATES, INC., \*a / Six Channel Recorder, Model 1902A / DESCRIPTOR: a push-button speed selector provides essentially instantaneous control of paper speed over the entire recording range; push-button controls are provided for individual selection of the recording scale factor of each channel; all models may be remotely controlled from the associated computer system, or may control the computer itself from the recorder location; chopper stabilization for all d-c amplifiers is supplied as a standard facility; all pens are protected against accidental overload by limiting circuits designed to prevent plot inaccuracies / USE: produced specifically for use with analog computing installations / -

FISCHER & PORTER CO., 330 Warminster Rd., Hat-

**Products and Services**

boro, Pa. / X-Y Reader / DESCRIPTOR: Automatically converts a curve into digital form suitable for typing, or for paper tape punch, punched card, or magnetic tape storage / USE: in curve handling / -

LIBRASCOPE, INC., 808 Western Ave., Glendale 1, Calif. / XY Plotters / DESCRIPTOR: two axis plotters for point or curve plotting, models for DC voltage or resistance input, converters for binary, punched card or punched tape input keyboards / -

LOGISTICS RESEARCH, INC., 141 S. Pacific Ave., Redondo Beach, Calif. / General Purpose, Analog Table-Type, Plotter-Follower; as plotter, input can be punched paper tape, edge-punched cards, IBM punched cards, keyboard / DESCRIPTOR: plotter gives analog representation on 24" x 36" table chart; data presentation includes straight point-to-point line drawing, or printed symbols for parameter studies; follower punches IBM cards, paper tape or edge-punched cards; can be used with digital differential analyzer; follows change in line slope up to and including infinity / USE: plotter, point and chart plotting; follower, function generator / plotter, \$5500; follower, \$4400; tax, shipping, extra

F. L. MOSELEY CO., 409 N. Fair Oaks Ave., Pasadena, Calif. / Moseley AUTOGRAF X-Y Recorder / DESCRIPTOR: two-coordinate X-Y recorder, curve follower, point plotter; card and tape translators; also large scale servo voltmeter with ranges from 3 millivolts to 300 volts / USE: data plotting and curve read-out / recorder, \$975 to \$1775; voltmeter, \$575

SERVO CORP. OF AMERICA, 20-20 Jericho Turnpike, New Hyde Park, L.I., N.Y. / Dead Reckoning Tracer (DRT) / DESCRIPTOR: automatically plots course and position of aircraft / USE: for detection and plotting / -

TALLY REGISTER CORP., 5300 14th Ave., N.W., Seattle, Wash. / High Speed Digital Plotter / DESCRIPTOR: digital input, multiple symbol X-Y plotter with continuous grid printing on continuous form vellum or paper stock / USE: operates directly from digital computers, card readers, keyboard, etc. / \$20,000

#### 47. POTENTIOMETERS

DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City, N.Y. / Precision potentiometers / DESCRIPTOR: linear and non-linear; standard and ball-bearing; gauging independent phasing / USE: aircraft and electronic equipment, computers guided missiles, communications / about \$9 to \$26 and up

FAIRCHILD CONTROLS CORP., 225 Park Ave., Hicksville, L.I., N.Y. / "Filmplot" Trimmer Potentiometer (Type 769) / DESCRIPTOR: A tiny new trimmer potentiometer, using precious metal film resistance element. The potentiometer provides extreme resolution throughout the 28-1/2 turn adjustment screw travel. Model may be adjusted to operate at temperatures as cold as -57° C. or as hot as 125° C. Size, 11/32 by 13/22 by 1-21/64

inches. Linearity of 5% is standard for resistance element values ranging from 50 to 25,000 ohms / USE: especially suitable where weight and space are critical

Helipot Corp., 916 Meridian Ave., South Pasadena, Calif. / Precision potentiometers; single and multi-turn, linear and non linear, turns counting dials

MARKITE CORP., 155 Waverly Pl., New York 14, N.Y. / Markite Potentiometers / DESCRIPTOR: precision potentiometers constructed with a solid resistive element of Markite conductive plastic; integrally co-molded to an insulator plastic base of matched expansion coefficient; extreme resolution and extreme wear resistance; rotational and rectilinear models; reliable, low noise behavior even under prolonged wear with rapid hunting or severe vibration / USE: as voltage divider in computer and control applications / \$35 to \$200

Servomechanisms, Inc., Westbury, N.Y. and El Segundo, Calif. / Film potentiometers / DESCRIPTOR: manufactured by evaporating a resistive film onto a ceramic disc using a high vacuum thermal evaporation technique; possess substantially infinite resolution; operate successfully over wide temperature ranges / USE: in high accuracy controls and instrumentation

Specialties, Inc., Syosset, N.Y. / precision potentiometers

Vari-Ohm Corp., Sunrise Highway, Amityville, N.Y. / potentiometers / linear and non-linear types; precision noise-free taps servo-made of the resistance wire itself; pitch and winding tension of resistance elements servo-controlled; no varnishes or lacquers to hold resistance wire

Vectoron, Inc., 1605 Trapelo Rd., Waltham 54, Mass. / Potentiometers, Wire-Wound, Precision / DESCRIPTOR: single-turn precision wire wound potentiometers; linear, tapped linear, and loaded function single-turn units in 1/2" to 6" diameter; bushing or servo mount, sleeve or ball bearings / USE: component part / \$10 to \$1500 in single lots; \$5 up in quantities

Waters Manufacturing, Inc., 4 Gordon St., Waltham, Mass. / precision potentiometers, miniature / DESCRIPTOR: miniature wire-wound potentiometers; linear and non-linear tapers; single and ganged units; bushing and servo mounts; special low torque models / USE: analog computers / \$10 to \$60 per single section

#### 48. PRINTERS (see also LINE-A-TIME PRINTERS)

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17, Ohio / electronic facsimile printers / for high-speed copying of typed data contained in unit card records

ANELEX CORP., 150 Causeway St., Boston 14, Mass. / high-speed printer / 1800 characters per second, numerical and alpha-numeric up to 64 characters and line lengths up to 120 characters

FISCHER & PORTER CO., 330 Warminster Rd., Hatboro, Pa. / Multiple Pressure Readout System /

#### Computers and Automation

DESCR: utilizes a single high-accuracy measuring device to rapidly sample and record up to 200 pressures with accuracy of 1 part in 2000; operation time 30 to 60 seconds / USE: for fast readout of pressures in wind tunnels, test facilities, chemical plants, etc., in column-log form

POTTER INSTRUMENT CO., 115 Cutter Mill Rd., Great Neck, N. Y. / Digital high-speed printer (Flying Typewriter)

TALLER & COOPER, INC., 75 Front St., Brooklyn, N. Y. / Printers

VICTOR ADDING MACHINE CO., 3900 N. Rockwell St., Chicago 18, Ill. / Victor digital printer / solenoid actuated numerical printer; will accept digits serially at a rate of 20 per second plus 0.3 seconds per line printing time; available in 7, 8, 10, and 11 column capacity / USE: as a printing readout device / \$380 to \$495

#### 49. PUBLICATIONS

COMPUTERS AND AUTOMATION, 815 Washington St., Newtonville 60, Mass. / Computers and Automation / DESCRIPTOR: Monthly magazine, about 50 pages per issue. Articles, reference information (14 kinds), papers, forum, etc., dealing with automatic computing machinery and its applications and implications / USE: For keeping up to date with the computer field; finding out reference information quickly / U. S., \$5.50 a year; foreign, \$6.50 a year

DATA PROCESSING DIGEST, 914 S. Robertson Blvd., Los Angeles 35, Calif. / Data Processing Digest / DESCRIPTOR: Monthly bibliographic service in field of data processing for business and industry; contains listings and abstracts of current articles, conference proceedings, papers; reviews of new books, films, meetings, and training courses. Complete references to original sources / - / \$24 per year (12 issues); group rates on request

#### 50. PULSE TRANSFORMERS

Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass. / Wide-Band Pulse and Coupling Transformers / pulse and coupling transformers / USE: high-speed digital computers, telemetering, radar, television circuits

Gudeman Co. of Calif., 9200 Exposition Blvd., Los Angeles 34, Calif. / pulse transformers

Gudeman Co. of Calif., \*a / Miniature Pulse Transformers / DESCRIPTOR: pulse widths from .05 to 100 microseconds; 2, 3, or 4 windings (with or without taps); epoxy resin impregnated and embedded, or sealed in metal containers; surpass MIL-T-27 test requirements / USE: for blocking oscillator and pulse coupling functions / \$2.90 to \$18.40 in quantity lots

RAYTHEON MANUFACTURING CO., 100 River St., Waltham 54, Mass. / Computer Pulse Transformers / DESCRIPTOR: a broad line of standard and custom-

designed miniature pulse transformers for computer application / USE: electronic computer circuitry / - SPRAGUE ELECTRIC CO., 377 Marshall St., North Adams, Mass. / Miniature Pulse Transformers / DESCRIPTOR: 18 standard types; hermetically sealed; operate at temperatures to 85° C; special designs available for high acceleration, high temperature operation / USE: impedance matching and inter-stage coupling in digital computers; as a blocking oscillator; for phase inversion; memory core current driving; as a current transformer

TECHNITROL ENGINEERING CO., 2751 N. 4th St., Philadelphia 33, Pa. / Pulse transformers / wound on ferrite and hypersil cores, cast in resin forming a small hermetically sealed unit; wound to meet needs of individual customers; commercial and military grades available / - / \$2.43 to \$8.50

#### 51. PUNCH CARD MACHINES

British Tabulating Machine Co., Ltd., 17 Park Lane, London W 1, England / Punched card machines

Bull S. A. Compagnie des Machines, 94 Avenue Gambetta, Paris 20e, France / punch card machines

DENNISON MANUFACTURING CO., Framingham, Mass. / Dennison Print-Punch Marking Machine / DESCRIPTOR: code information printed and punched simultaneously on price and inventory tickets, information from tickets converted automatically to punched cards / USE: inventory control, preparing merchandise reports and records automatically

INTERNATIONAL BUSINESS MACHINES CORP., 590 Madison Ave., New York 22, N. Y. / a complete line of punched card machines / DESCRIPTOR: card punch, electronic calculating punch ( - see also "Digital Computers"), collator, reproducer, interpreter, printing summary punch, 1000 card-a-minute sorter (Type 83), 100 line-a-minute tabulators (Type 402, 403), 150 line-a-minute tabulator (Type 407), data transceiver, cardatype (card punch feeding and reading control unit, auxiliary numerical keyboard, electric typewriter, card punch to produce paper tape, auxiliary automatic computing unit), etc. / -

INTERNATIONAL BUSINESS MACHINES CORP., \*a / Ticket Converter / DESCRIPTOR: takes in punched garment tag price tickets, puts out full-size IBM punched cards / USE: completed cards can be run through other standard IBM machines to produce merchandising reports / monthly rental, \$195

INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM 858 Cardatype Accounting Machine / DESCRIPTOR: produces up to five different documents simultaneously: for example, invoice, invoice register, shipping tag, stock selection ticket; the Cardatype types on a document either from information punched in IBM card, keyed into an auxiliary keyboard, or from manual operation of the typewriter / USE: by use of optional units, the following additional operations can be performed: multiplication, addition and subtraction, typing additional or different forms,

### Products and Services

punching output in either a paper tape or card / monthly rental from \$250

**INTERNATIONAL BUSINESS MACHINES CORP., \*a / IBM Data Transceiver / DESCR:** transmits punched card data over long distances automatically by telephone or telegraph / - / monthly rental, \$85 to \$110

**A. KIMBALL CO., 307 W. Broadway, New York 13, N. Y. / Print-Punch Machines and reading devices in the periphery of the computing field / DESCR:** Machines for printing and punching garment tags, inventory tags, production control tickets, etc. Machines for centrally reading tickets and tags into punched cards, punched tape, and direct to memories; "Machine language" processing equipment / USE: unit control and inventory control in department and chain stores; models of printing and punching equipment for creating of production control and piece-work ticket media for automatic processing to payroll and cost distributions; models of machines for creation of printed and punched identification media for inventory by reading the identification at specific control points / \$3,000 to \$10,000

**Powers-Samas Accounting Machines, Ltd., England /** Punch card tabulating equipment using small, medium and standard cards

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., 315 4th Ave., New York 10, N. Y. / Calculating Punch:** 90-Column Tabulating Card Calculating Punch, Type 330-4 / DESCR: adds, subtracts, multiplies and divides values punched into cards; punches results into same card or any or all following cards; various computations can be performed simultaneously / USE: in accounting machine procedures / \$235 monthly rental; \$16,675 sale; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Card Punch:** Card-O-Matic 90-Column Tabulating Card Punch, Type 308-6 / Alphanumeric key punch from which keyboard has been removed and installed in a remote control unit connected to the punch by electric cable; additional keys installed with regular punch keyboard for "field selection" / USE: card punch, remote control / rental, \$85 per month; sale, \$5220; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Card Punch:** 90-Column Tabulating Card Numeric Key Punch, Type 204-2 / DESCR: records information by punched holes; equipped to serve as verifier; information may be stored for repeat punching; electrified 10-key touch method keyboard / USE: punched card accounting machines operation, input-output in Univac File Computer System / \$25 monthly rental; \$1737 sales; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Collator:** 90-Column Tabulating Card Numerical Collator Type 319 / DESCR: collates punched cards numerically at a speed of 240 cards per minute from each feeding magazine; 2 feeding magazines, 4 receiving magazines; sequence checking of cards fed by both magazines; will collate numerical information and compare alphabetical in- formation simultaneously / USE: for numerous card processing operations / rental, \$100 per month; sale, \$10,000; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Computer:** 90-Column, Punched Card Electronic Computers, Types Univac 120, Univac 60 / DESCR: adding, subtracting, multiplying and dividing functions provided by built-in circuits; comprised of 2 units, a card sensing punching unit and an electronic computing unit / USE: accounting or statistical routine, engineering problems, etc. / rental \$690 to \$1275 per month; sale \$75,000 to \$97,000; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Interpreter:** 90-Column Tabulating Card Automatic Line Finding Posting Interpreter Type 312-4 / DESCR: automatic posting of ledger cards of tabulating card size at 45 postings per minute; requires 315-1 collator as a companion unit; posted data may be alphabetical or numerical / USE: for posting accounting or statistical ledgers / rental \$150 per month; sale \$10,420; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Interpreter:** 90-Column Tabulating Card Check-Writing Interpreter, Type 312-2 / DESCR: automatically interprets punched holes in tabulating card or card check; visibly registers the interpretation, on the face of the card or check / USE: for writing tabulating card checks / rental, \$95 to \$110 per month; sale, \$6600 to \$7640; subject to taxes

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Interpreter:** 90-Column Tabulating Card Interpreter Type 312 / DESCR: reads information from punched cards and prints the alphanumeric interpretation on the same card; 90 cards per minute / USE: easy means of verifying punching; provides easily read document for use outside machine accounting department / rental, \$85 to \$90 per month; sale, \$5904 to \$6252; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Reproducer:** 90-Column Tabulating Card Collating Reproducing Punch Type 315-1 / DESCR: 100 cards per minute from each of 2 feeding magazines; standard reproducing punch functions; will inter-file, segregate or select / USE: elimination of separate sorting, punching collating operations / rental \$150 to \$155 per month; sale, \$12,155; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Reproducers:** 90-Column Tabulating Card Reproducers for short cards, Types 314-3, 4, 5, & 6 / DESCR: punch into 90-column card information recorded in short cards of 16, 20, 27, or 33 columns; same features as Type 314; 125 cards per minute; will store information / USE: accounting or billing procedures / rental, \$125 per month; sale, \$8750; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Reproducer:** 90-Column Tabulating Card Interfiling Reproducing Punch, Type 310-1 / DESCR: reproducing punch; interfiles cards fed

#### Computers and Automation

from 2 feeding machines / USE: punched card accounting procedures; with Univac / rental, \$110 to \$150 per month; sale, \$9376; prices subject to tax  
**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Reproducer:** 90-Column Tabulating Card Multi-Control Reproducing Punch Type 310 / DESCRIPTOR: will reproduce card-for-card or many cards from one; feed two files of cards comparing values of one with the other and punch those that match or those that do not match or all cards; segregate cards that do not match; 8 out of 10 card feeding functions available may be incorporated on one machine / USE: payroll accounting, etc. / rental, \$85 to \$115 per month; sale, \$7640; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Reproducer:** 90-Column Tabulating Card Reproducing Punch, Type 314 / DESCRIPTOR: reproduces tabulating cards; reproduction may be exact or modified; may also be used as a duplicating punch / USE: in inventory control, billing, etc. / rental, \$37 to \$50 per month; sale, \$3473 to \$3820; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Sorter:** 90-Column Tabulating Card Electronic Sorter, Type 420 / DESCRIPTOR: sorts cards at a speed of 800 cards per minute; numerical or alphabetical sorting; may be wired for combined, position or selective sorting; additional features for card pairing, selective sorting and card counting available / USE: punched card sorting/ rental, \$80 per month; sale, \$5600; special features extra; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Sorter:** 90-Column Tabulating Card Standard Sorter, Type 320 / DESCRIPTOR: sorts cards either alphabetically or numerically at a speed of 420 cards per minute (also available at 250 cards per minute); may be equipped with counting attachment, pairing and selective sorting attachments / USE: sorting operations / rental, \$30 to \$82 per month; sale, \$2778 to \$5420; prices subject to taxes

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Summary Card Punch:** 90-Column Tabulating Card Summary Punch, Type 311 / DESCRIPTOR: automatically punches summary total, grand total, or both summary total and grand total information, with suitable identification, printed on reports or forms prepared on the Model 3 Tabulators to which it is permanently connected; also summary cards are optionally punched without delaying the tabulator / USE: punched-card procedures for accounting and statistical purposes / rental, \$80 per month; sale, \$5557; devices and attachments extra; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Synchro-Matic Punched Card Accounting Machine;** Punch Types 207-1, 308-1 & 308-4; Accounting Machines, Types 80, 81, 83 and 85 / DESCRIPTOR: numerical or alphabetic punches electrically connected and synchronized with various models

of Remington Accounting Machines to create punched cards containing information from entries and computations made on the accounting machines/USE: various accounting purposes / accounting machine rental, \$100 to \$250 monthly; sale, \$2000 to \$5000; key punches \$30 to \$45 monthly rental; \$2430 to \$3474 sale; prices are approximate and subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Tabulator:** 90-Column Tabulating Card Alphabetical Tabulator Model 3 / DESCRIPTOR: translates and prints, in any statement form desired, the numerical and alphabetical information punched in tabulating cards; adds, subtracts, prints, totals / USE: tabulating, accounting, analysis reports / rental, \$285 to \$495 per month; sale, \$20,159 to \$29,189; devices and attachments extra; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Ticket-to-Card Reproducers for Perforated Merchandise Tickets, Types 317-1 and 2 / DESCRIPTOR:** will read Kimball or Dennison price tickets; and punch into 90-column tabulating cards the price ticket information / USE: inventory control, sales and accounting analysis / rental, \$175 per month; sale, \$12,600; prices subject to tax

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP., \*a / Verifier:** 90-Column Tabulating Card Automatic Verifier, Type 313 / DESCRIPTOR: checks cards to determine whether they are correctly punched; 200 cards per minute; errors are flagged for easy identification / USE: to verify data entered by key punching / \$60 per month rental; \$4168 sale; prices subject to tax

**SYSTEMATICS, INC., 30 Hermosa Ave., Hermosa Beach, Calif. / Key Punch Adder System / DESCRIPTOR:** an attachment which interconnects a Monroe type 611 10-key adding machine with an IBM key punch, models 024, 026, 016, or 031; cards are generated automatically as the adding machine is operated; yields a proof tape over cards punched; allows operator to clear keyboard after faulty stroke; features automatic decimalization / USE: used in place of straight key punching, the device can increase punched card production as much as 100%; makes verifier operator unnecessary in most applications / \$1250

**SYSTEMATICS, INC., \*a — see "Data Processing Machinery"**

**UNDERWOOD CORP., One Park Ave., New York 16, N. Y. / Underwood-Samas punched card accounting machines and systems**

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#### 52. RECORDING PAPERS

**Alfax Paper & Engineering Co. / electro-sensitive recording paper in rolls**

**THE NATIONAL CASH REGISTER CO., Dayton 9, Ohio / NCR (no carbon required) Paper / DESCRIPTOR:** employs chemical system which eliminates need for carbon paper in business forms; available in roll or

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sheet stock; also available to manufacturers of adding machine, teletype and tally rolls / -

### 53. RECTIFIERS

Bradley Laboratories, Inc., 168 Columbus Ave., New Haven, Conn. / Selenium rectifier kits, high temperature rectifiers

### 54. RELAYS (COMPUTER TYPES)

Amperite Co., Inc., 561 Broadway, New York 12, N.Y. / Delay Relays

AUTOMATIC ELECTRIC CO., 1033 W. Van Buren St., Chicago 7, Ill. / Relays (Class "B") / DESCRIPTOR: twin contacts, long life, rugged, heavy-duty pin type armature bearing; high sensitivity; quick-acting or slow operating types / USE: standard screw mounting, or mounted on regular octal-type or industrial plugs. Wired or unwired / \$3 to \$8; if hermetically sealed, approximately twice as much

AUTOMATIC ELECTRIC CO., \*a / Relays (Class "S") / DESCRIPTOR: small size, light weight (2 oz. or less), twin contact springs, very resistant to vibration, humidity, and extremes of temperature / USE: standard screw mounting; special mounting for tin-dipped printed circuit cards, or mounted on regular octal-type or industrial plugs. Wired or unwired / \$3 to \$6; if hermetically sealed, approximately twice as much

BABCOCK RADIO ENGINEERING, INC., 7942 Woodley Ave., Van Nuys, Calif. / BR-4 Sub-Miniature Polarized Sensitive Relay / DESCRIPTOR: Sealed HC-6 crystal case; may be connected directly to printed circuits or leads cut for ELCO 767BC socket; contacts SPDT, center off; coils externally connected for sensing current direction or differential; 180 microwatt sensitivity; coil resistance optional to 5,000 ohms; undamaged by high shock or vibration / USE: as a low current direction sensing or differential sensing device / \$5 to \$25 depending on specifications and quantity

C. P. CLARE & CO., 3101 Pratt Blvd., Chicago 45, Ill. / High Frequency Impulse Relay / DESCRIPTOR: Type T Relay; highly sensitive relay; free from contact bounce; capable of following 2500 cycles per second with life measured in billions of operations / USE: in an analog computer

C. P. CLARE & CO., \*a / Power Relay / DESCRIPTOR: Type J 18 Power Relay; provides increased current-carrying capacity by use of Code 18 (silver) heavy duty contacts riveted to the springs; long life; increased adjustment stability provided by new hinge-type armature; rating of 10 amps, 27-1/2 volts d-c / USE: to handle inrush current of 50 amperes for 50,000 operations

C. P. CLARE & CO., \*a / Mercury-wetted Contact Relays / DESCRIPTOR: Type HG and HGP Relays; hermetically sealed, magnetically operated mercury-wetted contacts; Form C contact arrangement; com-

pletely chatter-free; operate up to 100 cps; 5 amp. or 500 volts max. load; life over one billion operations; enclosed with coil in steel, vacuum-tube-type cover; octal plug base; biased or polarized versions also available / USE: in high-speed switching equipment requiring high performance

C. P. CLARE & CO. \*a / Multicontact Mercury-wetted Contact Relays / DESCRIPTOR: Types HG2A, HG3A, and HG4A; 2, 3, or 4 "Form C" contact arrangements; operate up to 100 cps; no contact bounce; 5 amp. or 500 volts max. load; life over one billion operations; hermetically sealed, magnetically operated mercury-wetted contacts enclosed with coils in steel cover; plug-in mounting standard / USE: in high-speed switching equipment requiring high performance

North Electric Manufacturing Co., Industrial Div., Galion, Ohio / Relays, Multi-Contact type / DESCRIPTOR: up to 100 contact springs; gold contacts; minimum crosstalk / USE: for closing, opening or transferring large numbers of circuits simultaneously / \$10 to \$20

North Electric Manufacturing Co., \*a / Telephone Relays / up to 6 transfer contacts; bifurcated contact springs with gold points; compact equipment layout / USE: control functions / \$3 to \$8

Phillips Control Corp., Joliet, Ill. / relays for computers, etc.

TALLY REGISTER CORP., 5300 14th Ave., N.W., Seattle, Wash. / Electromagnetic pulse counters and pulsed relays

### 55. RESISTORS

British Electronic Sales Co., Inc., 23-03 45th Rd., Long Island City 1, N.Y. / High stability and precision carbon resistors

British Electronic Sales Co., Inc. \*a / Midget and miniature wire wound resistors / tiny vitreous enamel coated, completely insulated and sealed; high stability

The Daven Co., 530 W. Mt. Pleasant Ave., Rte. 10, Livingston, N.J. / Precision metal film type resistors (Davohm Series 850) / heat resistant glass tube; noble metal resistive element deposited on the inside surface; hermetically sealed / USE: to fill in gap between wire-wound and composition type resistors / \$.36 to \$1.44

The Daven Co., \*a / Precision wire wound resistors / highly accurate and stable; can be accurately wound / \$.45 to \$10.00

The Daven Co., \*a / R C Networks / composed of resistors and capacitors matched to temperature coefficients / \$10 to \$150

INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia, Pa. / fixed and variable resistors, controls, rectifiers, chokes / -

P.R. MALLORY & CO., INC., 40 S. Indianapolis 6, Ind. / Resistors, type AL / DESCRIPTOR: resistors, accurately wound on braided glass core; maintain rigid resistance values over entire operating range; no organic material used which might burn or blister; high grade tinned leads securely

### Computers and Automation

clinched to resistance elements to prevent "open circuits", "resistance changes", or "lead pull-outs"; designed for the exacting needs of computing machinery / USE: in most electronic computer equipment / 7¢ to 8¢

**OHMITE MANUFACTURING CO.**, 3635 Howard St., Skokie, Ill. / Miniature Wire-Wound Resistors / DESCRIPTOR: small axial-lead wire-wound vitreous-enamelled resistors; also miniature encapsulated wire-wound precision resistors -- both types extremely stable due to welded electrical connections / USE: especially suited for printed circuits, terminal board, and point-to-point wiring applications / 85¢ to 95¢ (axial-lead resistor); \$1 to \$8 (precision resistor); price depends on quantity and resistance value

**Resistance Products Co.**, 914 S. 13th St., Harrisburg, Pa. / precision wound wire resistors / bobbin type, high accuracy wire wound resistors made to meet MIL specification MILR-93A; standard resistance tolerance of 1% can be furnished with tolerance of .02% / USE: in computers and instrumentation, as resistance standards and in military equipment

**Resistance Products Co.**, \*a / High voltage resistors / Carbon film on steatite rod; available in various sizes for voltages from 3500 V up to 125,000 V; power ratings from 1 watt to 100 watts; resistances available up to 1 million megohms; standard tolerance of 15%, tolerances of 10%, 5%, 3% also available; matched pairs can be furnished with tolerance of 2% / USE: high resistance voltage dividers, bleeders, and high voltage power circuits, corona resistors, X-Ray equipment, etc.

**Resistance Products Co.**, \*a / High megohm resistors / carbon type resistor having high stability; furnished in resistance values up to 100 million megohms; also furnished in hermetically sealed type; standard tolerance of 10%, 5% and 3% also available / USE: in electrometer circuits, photocell circuits, radiation equipment, and as resistance standards

**SPRAGUE ELECTRIC CO.**, 377 Marshall St., North Adams, Mass. / precision and power-type resistors

### 56. RESOLVERS

**American Machine and Foundry Co.**, Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass. / resolvers

**Bendix Aviation Corp.**, Eclipse-Pioneer Division, Teterboro, N.J. / resolvers / high precision, high frequency / -

**Norden-Ketay Corp.**, 99 Park Ave., New York, N.Y. / resolvers / resolvers from coarse (0.2%) to precision (0.05%) / USE: in computers, radar sweep circuits, phase shifters, and accurate data transmission systems, etc.

### 57. ROBOTS, SMALL

**BERKELEY ENTERPRISES, INC.**, 815 Washington St., Newtonville 60, Mass. / Small Robots / DESCRIPTOR: small robots such as Simon, a miniature mechanical brain; Squee, an electronic robot squirrel; Tit-Tat-Toe game-playing machine; Nim machine; Geniac electric brain construction kit, etc. / USE: in shows, lecturing, teaching, exhibits, displays, explaining / \$10 to \$4000, or rental

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### 58. SCANNERS

**American Machine & Foundry Co.**, Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass. / scanners

**FISCHER & PORTER CO.** — see "Printers"

### 59. SIGNALING CONTROLS

**Union Switch and Signal Co.**, Division of Westinghouse Airbrake, Pittsburgh 18, and Swissvale, Pa. / railroad signaling and control systems

### 60. SIMULATORS

**Allegany Instrument Co., Inc.**, 1091 Wills Mountain, Cumberland, Md. / Type K-7 Error Computer / Simulates error-producing factors involved in wire strain transducer systems commonly employed in measuring force strain, pressure, torque, etc. Computes by analog the effect of the various factors and presents the error directly in percent of correct magnitude / \$3565

**COMPUTER ENGINEERING ASSOCIATES, INC.**, 350 N. Halstead St., Pasadena, Calif. / Direct Analogy Electric Analog Computer (DAEAC) / DESCRIPTOR: consists of transformers, resistors, inductors, capacitors, amplifiers, metering system, and patch board control; applied using the approach of a network analyzer. Maintains one-to-one correspondence of physical system parameters to electrical network elements / USE: engineering analyses / \$150,000 to \$1,000,000; taxes extra

**THE NEWTON CO.**, 55 Elm St., Manchester, Conn. / Training devices and simulators

**SERVO CORP. OF AMERICA**, 20-20 Jericho Turnpike, New Hyde Park, L.I., N.Y. / Servomation Building Blocks, Servoboard and Servoscope / DESCRIPTOR: components enable simulation of actual laboratory and production conditions / USE: to develop prototypes and experimental models / -

**SOUTHWESTERN INDUSTRIAL ELECTRONICS CO., INC.**, P.O. Box 13058, Houston 19, Tex. — see "Analog Computers"

### Products and Services

Union Switch and Signal Co., Div. of Westinghouse  
Airbrake, Pittsburgh 18, Pa. / Aircraft flight  
simulators

#### 61. STEPPING SWITCHES

**AUTOMATIC ELECTRIC CO.**, 1033 W. Van Buren St., Chicago 7, Ill. / Stepping Switch (Type 44) / DESCRI: light-weight; capacities: 10 points, 6 levels; 20 points, 3 levels; 30 points 2 levels; can operate on 6, 12, 24, 48, 60, or 110 volts d-c, or 115 v., 60 cycles a-c with rectifier / USE: same as Type 45 Stepping Switch, which see / \$12 to \$18; banks with taper-tab terminals at no extra charge

**AUTOMATIC ELECTRIC CO.**, \*a / Stepping Switch (Type 45) / DESCRI: high speed, a-c or d-c operation; capacities: 25 points, 12 levels; 50 points, 8 levels / USE: for selecting a particular circuit from a group; an idle circuit from a group consecutively performing operations in separate individual circuits; providing timed pulses at accurately spaced equal or unequal time intervals / \$18.00 to \$45.00; banks with taper-tab terminals at no extra charge

**C. P. CLARE & CO.**, 3101 Pratt Blvd., Chicago 45, Ill. / Stepping Switches / DESCRI: Spring-driven switches Types 11, 20, 26, 40 & 52 and Direct-Drive Stepping Switches / USE: as uniselectors, or rotary switches, for completing, interrupting, or changing the connections in a succession of electric circuits in response to momentary impulses of current

**The Daven Co.**, 530 W. Mt. Pleasant Ave., Rte. 10, Livingston, N.J. / Precision Switches / DESCRI: high quality, precision type, rotary step switches / USE: for use over long periods of time under severe climatic conditions / \$6.50 to several hundred dollars

**IMTRA CORP.**, 58 Charles St., Cambridge, Mass. / Bothway Uniselector / DESCRI: forward or reverse stepping, with a single unit, at the choice of the operator; operating voltage from 12 to 220 volts DC; speeds to 65 steps per second on self-interruption or 20 steps per second from external impulses; choice of 25-point banks up to 6 levels, or 50-point banks up to 3 levels; bridging or non-bridging wipers as required / USE: selection, sequence control, counting (especially when subtracting is desirable), totalizing, pulsing, step-by-step drive / \$27.70 to \$32.10

**North Electric Manufacturing Co.**, P.O. Box 417, Galion, Ohio / Rotary Stepping Switches / 30 point-6 level or 15 point-12 level; dust-covered banks, spring mounted, high stepping speeds / -

#### 62. STORAGE SYSTEMS — see DELAY LINES, MAGNETIC STORAGE SYSTEMS

#### 63. SYNCHROS

**Bendix Aviation Corp.**, Eclipse-Pioneer Division, Teterboro, N.J. / Synchros, high precision, corrosion-resistant

**Kearfott Co., Inc.**, Clifton, N.J. / synchros

**Norden-Ketay Corp.**, 99 Park Ave., New York, N.Y. / Synchros and servo motors / DESCRI: synchros from size 10 to size 37; units for every purpose including dual synchros as a control transmitter or a control transformer; transolvers — special purpose devices for use in converting three-phase data. Servo motors: 400 and 60 cycle servo motors; high torque-to-inertia servos are available as small as a penny and up to size 23; torques of 0.1 in.-oz to 7.5 in.-oz / - / -

### T

#### 64. TAPE-TO-CARD CONVERTERS

**Austin Co.**, 76 Ninth Ave., New York 11, N.Y. / Tape to Card Converters / DESCRI: converts tape to cards, producing 80 summary cards per minute / USE: for reading out digital data from magnetic tape, and feeding the data to an IBM Summary Punch

**INTERNATIONAL BUSINESS MACHINES CORP.**, 590 Madison Ave., New York 22, N.Y. / 46 Tape to Card Punch / DESCRI: reads alphabetic or numerical information from a punched paper tape and converts it to IBM cards; Model 1 is for use with 5-channel telegraphic tape produced on Card-Controlled Tape Punch or telegraphic equipment; Model 2 is for use with 8-channel tape produced on Typewriter Tape Punch; 5 channel tape may be used for transmission by commercial wire services / monthly rental \$135 to \$140

**REMINGTON RAND UNIVAC DIV., SPERRY RAND CORP.**, 315 4th Ave., New York 10, N.Y. / Tape-to-Card Converter, Type 308-5 / DESCRI: key punch electrically connected to 5 channel code paper tape reader so information is read, decoded and punched into 90-column tabulating card; 420 characters per minute; may be used as standard punched card accounting machine key punch / USE: convert paper tape information to punched cards; also used with Univac / rental, \$70 per month; sale, \$5075; prices subject to tax

#### 65. TRANSISTORS

**Baird Associates**, 33 University Rd., Cambridge 38, Mass. / Transistors

**Datamatic Corp.**, 151 Needham St., Newton Highlands 61, Mass. / Transistors

**Epsco, Inc.**, 588 Commonwealth Ave., Boston, Mass. / Transistors

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### Computers and Automation

GERMANIUM PRODUCTS CORP., 26 Cornelison Ave., Jersey City, N. J. / Transistors (computer types)

/ DESCRIPTOR: Silicon and Germanium transistors with high alpha cutoff, high emitter-diode breakdown voltages for specific computer applications; also for r.f. amplifier, audio and d.c. amplifiers / USE: for commercial and military uses in high speed computers, r.f. and audio amplifiers and d.c. amplifiers / \$2 to \$30

LANDSDALE TUBE CO., DIV. OF PHILCO CORP., Lansdale, Pa. / Philco Surface Barrier Transistor / DESCRIPTOR: high speed switching transistors / USE: computer applications, etc. / \$6.00

P.R. MALLORY & CO., INC., 40 S. Gray St., Indianapolis, Ind. / Transistors, 400 series / DESCRIPTOR: rugged; current gain, up to 90 at 0.2 amp. and 35 at 2 amp; 27 ohm input impedance; fixed voltage bias; hermetically sealed for long life; maximum storage temperature, 85° C. / USE: transistorized power supplies, power switching, amplifier inversion, oscillator applications, etc. / \$17.50, (50 or less); \$12.50, (51 or more)

PHILCO CORP., Government & Industrial Div., Philadelphia, Pa. — see "Digital Computers"

Radio Corporation of America, Tube Division, 415 South 5th St., Harrison, N. J. / Transistors for computers

Radio Development & Research Corp., 26 Cornelison Av., Jersey City, N. J. / Transistors / DESCRIPTOR: silicon and germanium transistors / USE: computers; D.C. and audio amplifiers; fast and slow switching for military and commercial applications, etc. / \$2 to \$30

RAYTHEON MANUFACTURING CO., Receiving and Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass. / Transistors / DESCRIPTOR: silicon and germanium transistors / USE: computers and related uses / -

SYLVANIA ELECTRIC CO., 1740 Broadway, New York 19, N. Y. / Transistors / USE: computers and other uses / \$1 to \$5

Transistor Products, Inc., 241 Crescent St., Waltham 54, Mass. / Transistors

American Machine & Foundry Co., Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass. / Visual displays

Convair, a Division of General Dynamics Corp., General Offices: San Diego 12, Calif. / The Charactron / a computer output device for converting coded information into tabular or graphic alphanumeric information on a cathode ray tube screen

ELECTRONIC CONTROL SYSTEMS, INC. — see "Computer Test Equipment"

ELECTRONIC CONTROL SYSTEMS, INC. — see "Digital Computers"

TECHNITROL ENGINEERING CO., 2751 N. 4th St., Philadelphia 33, Pa. / Visual Displays / DESCRIPTOR: visual displays, incandescent light matrix and cathode ray display of numerical and alphabetical information; designed as units or to fit in custom built consoles; switches, indicator lights, and keyboards included in consoles / - / \$10,000 up

TELEREGISTER CORP., 445 Fairfield Ave., Stamford, Conn. / Indicator Units (Type K, Type 68B) / DESCRIPTOR: rotatable eleven position drum with digits 0 to 9 and blank is stepped by an electromagnet to the blank position; a counted series of pulses then steps it to the required digit; in some types the indication can be read out / USE: visual display for electronic computers and for stock quotation boards / \$10 to \$35

### 66. TRANSLATING EQUIPMENT

Telequipment Corp., Sea Cliff, N. Y. / Cryptographic Machine / Automatically converts plain language text into secret text and at receiving end automatically reconverts to plain language / USE: in connection with existing teletype equipment / \$6,500 to \$8,000

### V

### 67. VISUAL DISPLAYS

ACF ELECTRONICS, 800 No. Pitt St., Alexandria, Va. / Display equipment

## WHO'S WHO IN THE COMPUTER FIELD

(Supplement, information as of May 3, 1956)

This is Supplement No. 3 to the second edition of "Who's Who in the Computer Field" published in "The Computer Directory, 1955", the June 1955 issue of "Computers and Automation", pp 6 to 102. Supplement No. 1 appeared in the June 1955 issue, pp 148 and 150. Supplement No. 2 appeared in the October 1955 issue, pp 29 to 35.

The purpose of this Who's Who is to give some information about persons interested in one phase or another of the computer field. The source of this information is correspondence or completed Who's Who forms sent to us after October 1955 and before May 3, 1956. Information which has been received after May 3, the closing date for this supplement, will be published in an early issue.

In order to help defray the cost of printing the Who's Who (the 7400 entries in the June, 1955, edition resulted in a heavy cost that did not pay for itself), a nominal charge of \$2 an entry has been requested this year. This charge has been paid by about one third of the persons listed in the following supplement. The editors of "Computers and Automation" appreciate very much this contribution towards the cost of the Who's Who and express their thanks to these contributors.

If your entry in the Who's Who is incorrect, please send us the correct information, and we shall try to publish it in an early issue.

Entries. A full entry consists of: name / title, organization, address / interests (the capital letter abbreviations are explained below) / year of birth, college or last school (background), year of entering the computer field, occupation, other information (distinctions, publications, etc.) / code. In the code the digit such as 6 denotes the year ('56) when the information in the entry was received. In places where no information is given, a "-" denotes omission. The entry of a person in the Who's Who has not depended upon his subscribing to "Computers and Automation" nor upon his contributing to help defray the cost of preparing and printing the Who's Who.

Abbreviations. Since a great deal of information is to be presented, abbreviations have been extensively used. Nearly all these abbreviations can be easily guessed like those in a telephone book. The letters "A, B, C, D, E, L, M, P, S" stand for main interests "Applications, Business, Construction, Design, Electronics, Logic, Mathematics, Programming, Sales", respectively.

Who's Who Entry Form. The form for an entry in the Who's Who is as follows:

Name (please print)? \_\_\_\_\_

Your Address? \_\_\_\_\_

Your Organization? \_\_\_\_\_

Its Address? \_\_\_\_\_

Your Title? \_\_\_\_\_

### YOUR MAIN COMPUTER INTERESTS:

Applications       Programming  
 Business       Sales  
 Construction       Other (specify): \_\_\_\_\_  
 Design      \_\_\_\_\_  
 Electronics      \_\_\_\_\_  
 Logic      \_\_\_\_\_  
 Mathematics      \_\_\_\_\_

College or last school? \_\_\_\_\_

Year entered the computer field? \_\_\_\_\_

Year of birth \_\_\_\_\_ Occupation? \_\_\_\_\_

Anything else? (publications, distinctions, etc.)  
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(cont'd on page 68)

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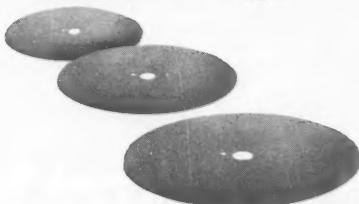
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## A

Adler, Cyrus / Lecturer in physics, CCNY, Physics Dept, 137th & Convent Ave, N Y, N Y / AEM / '27, NYU, '51, lecturer / 6t

Albright, Louis E / Elecnc Aplns Spec, National Cash Register Co, Dayton 9, Ohio / ABPS / '21, Purdue Univ, '54, sys analyst / 6t

Alden, William L / Pres, Automation Management, Inc, Adams St, Westboro, Mass / ABS / '26, Harvard, '52, exec, co-author "The Automatic Office" / 6r

Alt, Franz L / Asst Chief, Apld Math Div, National Bureau of Standards, Washington, D C / ABLMP / '10, Univ of Vienna, '45, mathn, author, Chmn Edit Bd, Assoc of Computing Machinery / 6r

Anderson, E Paul / Dir, Elecnc Data Processing Serv, National Analysts, Inc, 1015 Chestnut St, Phila 7, Pa / ABMP / '20, West Point, '50, Dir Natl Analysts Elecnc Data Processing Bureau / 6r

Anderson, Ralph V / Asst Chief, Cryptography Staff, Dept of State, Washington 25, D C / CD / '09, - '49, cryptographer / 6t

Arenberg, David L / Owner, Arenberg Ultrasonic Lab, 94 Green St, Jamaica Plain 30, Mass / EP / '15, Mass Inst of Tech, '46, physicist, inventor / 6t

Armer, Paul / Hd, Numer Analysis Dept, Rand Corp, 1700 Main St, Santa Monica, Calif / ABMP / '24, UCLA, '47, mathn / 6r

Arnott, Richard D / Chief Payroll & Commission Acctnt, Nationwide Mutual Ins Co, 246 N High St, Columbus 16, Ohio / ABP / '27, Miami Univ, '53, accountant / 6

Astrahan, M M / Sr Engr, IBM Corp, 99 Notre Dame Ave, San Jose, Calif / BDLP / '24, Northwestern, '49, elecl engr, secy-treas, Joint Compr Comm / 6

Athans, Paul W / Sr Industrl Engr, Stanford Res Inst, 820 Mission St, S Pasadena, Calif / ABLPS / '11, Univ of Calif, '54, - / 6

Auriema, R C / Vice Pres, AD Auriema, Inc, 89 Broad St, N Y 4, N Y / AES / '25, MIT, '54, sales engr / 6t

## B

Bagley, Philip R / Staff Mbr, Lincoln Lab, Mass Inst of Tech, Box 73, Lexington 73, Mass / P / '27, Mass Inst of Tech, '51, prgrmr, engr / 6

Barnett, Charles William / Res Compr Analyst, Louisiana State Univ, Baton Rouge, Louisiana / ALMP, organizing compr ctr / '27, Louisiana State, '53, mathn / 6t

Batchelor, James H / -, -, / AB / '89, Dartmouth, '50, mngmt counsel, author / 6

Bayne, G Walter / Sr Partner, G W Bayne & Assoc, 9014 Beverly Blvd, Los Angeles 48, Calif / AB / '03, NYU, '31, mngmt conslnt, author, investigator / 6

Beaver, A Richard / Mgr Elecncs Res, Addressograph Multigraph Corp, 1200 Babbitt Rd, Cleveland, Ohio / ABCDEPS / -, Amherst, -, sales, res & methods / 6r

Beckstead, Gordon L / Mathml Analysis Grp, AiResearch Mfg Co of Arizona, Phoenix, Ariz / MP / -, -, -, / 6

Beecher, Duane E / -, Hughes Aircraft Co, Culver City, Calif / AEMP / '30, Univ of Utah, '52, elecnc engr, author / 6

## Who's Who

Bennett, Richard K / staff, Lincoln Lab, Lexington, Mass / ABP / '26, Mass Inst of Tech, '55, elecl engr / 6t

Benson, Allan I / Mgr, Lynn Digital Computations, General Electric, 1000 Western Ave, West Lynn 3, Mass / ABMP / '16, Univ of Wisconsin, '49, manager / 6t

Berggren, Robert / Compg entr, Douglas Aircraft Co, 3855 Lakewood Blvd, Long Beach, Calif / MP / '24, Univ of Minn, '52, compg engr / 6r

Bernstein, Morton I / Mathn, Rand Corp, 1700 Main St, Santa Monica, Calif / MP / '27, Univ of Pitts, '54, prgrmr / 6t

Beutler, John A / Res Engr, E I du Pont de Nemours Inc, Wilmington, Del / AMP, analog comprs / '23, Oregon State, '52, res engr / 6t

Bezaire, William A / Hd Operation & Maintnce, Rich Elecnc Compr Ctr, Georgia Inst of Tech, Atlanta, Ga / ABCDELMP / '27, Univ of Detroit, '50, Hd Oper & Maint, comprs / 6t

Bitterly, T R / Asst Mgr Elecnc Sales, National Cash Register Co, Dayton, Ohio / ABPS / -, St Peters College, -, - / 6

Blue, Larry / Res Engr, North American Aviation, Box 309, Canoga Park, Calif / ALMP / '30, Univ of Colorado, '54, nuclear reactor analysis / 6

Bosgang, Alvin J / Mgt Conslnnt, Ebasco Services, Inc, 2 Rector St, New York, N Y / ABPS / '29, CCNY, '50, conslntg compr aplns / 6

Bradley, Donald S / Supt, Univac Compr Ctr, Terminal Tower, Cleveland, Ohio / ABP / '20, Randolph-Macon College, '52, compr prgrmr / 6r

Bradley, John L / Asst Mgr advg & sales promotion, Ampex Corp, 934 Charter St, Redwood City, Calif / ABES, mngmt / '19, Stevens Inst of Tech, NYU, Univ of Calif, '45, marketing, author "The Marketing of Electronics Industry Goods" / 6r

Brayer, Herbert O / Professor, Loyola Univ, 4660 Ravenswood Ave, Chicago 40, Ill / ABE / '13, Univ of Calif, '53, teacher, Assoc editor Amer Business Mag, publisher, author "Management's Approach to Office Automation" / 6

Brehm, L W / Assoc Engr, IBM Corp, Endicott, NY / ABDL / '21, Univ of Wisconsin, '52, mechl engr / 6r

Bridgham, Minot R / Sr Supvr Elecnc Instlns, Met Life Ins Co, 1 Madison Ave, N Y / A / '10, Mass Inst of Tech, BPI, '52, - / 6t

Brock, Paul / Assoc Prof, Purdue Univ, West Lafayette, Indiana / ABDLM / '23, NYU, '48, professor, publns / 6

Brooks, Frederick P, Jr / student, Computation Lab Harvard Univ, Cambridge 38, Mass / ABDELMP / '31, Harvard, '53, -, / 6r

Brown, Arry L / student, Georgia Tech, Atlanta, Ga / M / '06, Georgia Tech, '54, instructor / 6

Brown, Donald M / Head, Dig Compr Facility, Univ of Mich Engrg Research Inst, Willow Run Labs, Ypsilanti, Michigan / EMP / '07, Univ of Illinois, '49, res engr / 6r

Brown, Edwin T / -, Douglas Aircraft Co, Long Beach, Calif / - / -, -, -, - / -

Brown, Henry Rhodes, Jr / Compr Spec, Autonetics, Div of North American Aviation, 12214 Lakewood Blvd, Downey, Calif / D / '21, Mass Inst of Tech, '42, compr devt engr, patents in compr field / 6t

Buckner, H W / Grp Engr, Dig Compn Lab, Convair, San Diego, Calif / ABMP / '19, Missouri Schl of Mines & Metallurgy, '47, engr / 6

(cont'd on page 70)

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Bummer, C W / Mathn, Douglas Aircraft Co, Long Beach, Calif / P / '29, Concordia College, '55, prgmg & analysis / 6r  
Bumstead, Ralph W / Consltg Engr, Patent Attorney, CPA, self-employed, 624 Maple St, Westfield, N J / ABE, automation / '81, Yale Univ, '17, consltg engr, patent atty, CPA / 6t

Who's Who

Crowley, William V / Head, Elecnc Proc Branch, Naval Aviation Supply Office, 700 Robbins Ave, Phila 11, Pa / AB, consltg admn / '19, Stanford Grad Schl of Business, '54, Lt Cdr, SC, Elecncs in Mgt, pp 86-91, Univ Press, 1956, Washington, D C / 6r

C

Casey, Joseph Kenneth / Stress Apls Spec, General Electric, Evendale, Ohio / A / '25, Brown, '53, appld math / 6r  
Chambers, Francis T / Product Engr, Appld Science Corp of Princeton, Box 44, Princeton, N J / CDE, telemetering, data reduction / '24, Princeton, -, elecnc engr / 6r  
Chapin, Ned / consultant, 3140 S Michigan, Chicago 16, Ill / AB, operations res / '27, Univ of Chicago, Illinois Inst of Tech, '54, consultant, educator / 6t  
Chaplin, Sheldon W / Machine Acctnt Chf, U S N, Naval Aviation Supply Office, 700 Robbins Ave, Phila 11, Pa / AP, performance & opern statistics / '17, Bryant College, '54, statn & prgmr / 6r

Charouhis, Gregory J / -, Naval Aviation Supply Office, 700 Robbins Ave, Phila 11, Pa / ABLP / '16, Burdett College, '55, CPO, U S N / 6  
Charp, Solomon / Sr Staff Engr, Franklin Inst, 20th St & Parkway, Phila 3, Pa / ADE / '20, Univ of Penn, '44, research / 6t  
Chase, Charles C / Mgr Sys & Procedures, M W Kellogg Co, P O Box 469, Jersey City 4, N. J / AB / '16, Mass Inst of Tech, '52, Advisor, The Hoover Commission, Past-Pres Sys & Procedures Assoc of Amer / 6t

Chiappinelli, Bruno A / Exec Assoc, Canning, Sisson & Assoc, 914 S Robertson Blvd, Los Angeles 35, Calif / ABEPS, sys engrg, design of business sys / '25, UCLA, '49, data proc constnt, paper on "Use of IBM CPC for Payroll" / 6t

Church, Randolph / Chrmn Dept of Math & Mech, US Naval Postgraduate School, Monterey, Calif / M, instruction analog comprs / '04, Yale, '38, professor / 6t

Coffee, Charles T / E T F Compr Prgmg Group Ldr, Aro Inc., Tullahoma, Tenn./. AEDCM / '27, Conner, Mary Louise / Prob Analysis & Prgmg Sec Officer, Naval Aviation Supply Office, 700 Robbins Ave, Phila 11, Pa / ABP / -, Morris Harvey College, naval officer / 6r

Conroy, Charles / Asst Vice Pres, Bank of America, NT 7 SA, 300 Montgomery St, San Francisco, Calif / AB / -, -, -, / 6

Craig, Leonard J / Engr, Rand Corp, 177 Main St, Santa Monica, Calif / ADEL / '24, UCLA, '50, engr, author / 6

Crane, A J / Methods Dir, Springs Cotton Mills, Lancaster, S C / AB / '19, Waltons, '54, CPA, apln of paper work to comprs / 6

Crean, Martin J / Supvsr of Systems Programming, Sperry Gyroscope Co, Div of Sperry Rand, Lake Success, L I, N Y / ABP / '13, NYU, '54, systems prgmg / 6

Creighton, Joseph F / Elecnc Proj Rep, Strawbridge & Clothier, Phila, Pa / ABEP / '27, Lehigh Univ, '54, elecnc res / 6t

D

Daniel, D Ronald / Ofcr Chg Operns, Elecnc Proc Br, Integr Data Proc Div, Naval Aviation Supply Office, 700 Robbins Ave, Phila 11, Pa / ABMPS / '30, Harvard Grad Schl Bus Admn, Wesleyan Univ, '55, - / 6r

Davidson, John T / Vice Pres, Engrg & Res, Standard Register Co, Campbell & Albany Sts, Dayton, Ohio / ABCDS / '01, Ohio State, '27, engr / 6r

Demurjian, Malcolm S / Consultant Supvsr, Prgmg Dev, Engrg Dept, E I Dupont de Nemours, Wilmington 98, Del / ABDM / '24, Columbia Univ, '48, res engr, mathn / 6t

Dengler, Max A / Grp Leader, Mathmcl Analysis Grp, AiResearch Mfg Co of Arizona, Phoenix, Ariz / MP / -, -, -, / 6

Denman, N A / Apln Engr, Basic & Experimental Physics, Box 689, Falmouth, Mass / ADM / '22, Drexel Tech, Stevens Tech, '50, engr / 6

Dillard, J K / Mgr, Elec Utility Engrg, Westinghouse Elec Corp, E Pittsburgh, Pa / A / '19, Georgia Tech, Mass Inst of Tech, '53, elec engr / 6t

Dillon, William E / Mathmcl Analysis Grp, Ai Research Mfg Co of Arizona, Phoenix, Ariz / MP / -, -, -, / 6

Dorfman, J / Regnl Sales Mgr, Raytheon Mfg Co, 589 5th Ave, New York, N Y / - / -, -, / 6t

Dowkont, Anthony J / Assoc Res Engr, The Rand Corp, 1700 Main St, Santa Monica, Calif / ABDP, data communications / '29, Mass Inst of Tech, Columbia Univ, '54, res engr / 6r

E

Eaton, Carleton G, Jr / Sr Proj Engr, Vectron, Inc, 1605 Trapelo Rd, Waltham 54, Mass / ALMP / '19, Mass Inst of Tech, '46, - / 6

Edelman, Franz / Res Mathn, RCA Lab, Princeton, NJ / MP / '22, Brown Univ, '51, mathn / 6t

Eisenberg, Albert J / Mgr Machine Acctg Dept, Bache & Co, 36 Wall St, New York 5, N Y / ABEP / '16, LIU, '38, manager / 6t

Elliott, O B / Apls Spec, National Cash Register Co, Dayton 9, Ohio / ABP / -, William and Mary College, -, / 6

Embody, Daniel R / Head Statistics Dept, E R Squibb Div, Olin-Mathieson Chem Corp, Georges Rd, New Brunswick, N J / AMP / '14, Cornell, '53, statn / 6t

(cont'd on page 72)

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Rubin, Morton S / Proj Rep Business Machines, Filene's, Boston, Mass / AB / '21, Yale, '55, retail mchdsg / 6t

Rubinoff, Morris / Assoc Prof, Univ of Penna, Moore School of Elec Engrg, 200 S 33 St, Philadelphia 4, Pa / ABCDELMPS / '17, - / '46, assoc, professor, numerous publns / 6

Rudin, Robert H / Mfg Engr, Convair, Div of General Dynamics Corp, Pomona, Calif / AP, automation / '16, Northwestern, '55, mfg planning / 6

Russell, Cecil R / Proj Mgr, J B Rea Co, Inc, 1723 Cloverfield Blvd, Santa Monica, Calif / ACD / '23, USC, '50, engr / 6

S

Sabin, Donald J F / Genl Acctg Supv, New England Tel & Tel, 185 Franklin, Boston, Mass / ABELMPS / '04, Mass Inst of Tech, '52, mgt / 6t

Savant, C J, Jr / Asst Chief Engr, Servomechanisms Inc, 12500 Aviation Blvd, Hawthorne, Calif / E / '26, Calif Inst of Tech, '49, asst chief engr / 6

Schapiro, Harold / Engr, National Cash Register Co, Elecnc Div, 1401 E El Segundo Blvd, Hawthorne, Calif / ABDEL / '32, Mass Inst of Tech, '54, res engr, various patents / 6

Scharff, Samuel A / Consulting Engr, Samuel A. Scharff, 366 Madison Ave, New York 17, N Y / ABCDE / '21, Mass Inst of Tech, '43, engr / 6t

Schumacher, Lloyd E / Vice Pres, Engrg & Productn, J B Rea Co, Inc, 1723 Cloverfield Blvd, Santa Monica, Calif / - / dvlpmnt & mfg / '17, Ohio State Univ, '48, engrg / 6

Schwartz, Benjamin L / Principal Mathn, Battelle Memorial Inst, Columbus, Ohio / ABMP / '26, - / '53, mathn / 6

Score, Leroy J / Sys Engr, Commercial Controls Corp, 1 Leighton Ave, Rochester, N Y / ABCDELMPS / '24, Illinois Inst of Tech, '47, engr / 6t

Sehnert, Robert H / Apln Engr, Atomics Intl, Div of North American Aviation, P O Box 309, Canoga Park, Calif / MP / '17, UCLA, '48, physicist, Supv Numerical Analysis, NAA / 6

Selfridge, J L / Grad Res Mathn, UCLA, 405 Hilgard Ave, Los Angeles, Calif / ADLMP / '27, UCLA, '51, - / 6t

Selfridge, Lenore D / Grad Res Mathn, Inst of Geophysics, UCLA, Los Angeles, Calif / AP / '25, Univ of Washington, '48, - / 6

Sendrow, Marvin / Class A Engr, RCA, Bldg 10-2, Delaware & Cooper Sts, Camden, N J / ABDP / '28, Univ of Michigan, '51, prgmr / 6t

Shepard, F H, Jr / Pres, Shepard Laboratories, 480 Morris Ave, Summit, N J / - / -, Yale Univ, -, conslnt elecnc & electro-mech engr / 6

Shoys, C K / Aplns Spec, National Cash Register Co, Dayton 9, Ohio / ABP / -, Lawrence, - / 6

Singer, Edwin / Sr Engr, Teleregister Corp, 445 Fairfield Ave, Stamford, Conn / DEL / '25, NYU, '51, elecnc engr / 6

Sisson, Roger L / Partner, Canning, Sisson & Assoc, 914 S Robertson Blvd, Los Angeles 35, Calif / ABP, conslnt, data processg, bus sys / '26, Mass Inst of Tech, '48, conslnt / 6

Slap, Joseph K / Group Engr, Elec Comptg & Numerical Analysis, Northrop Aircraft, Hawthorne, Calif / AP / '25, Queens College, UCLA, '51, - / 6

Slee, Vergil N / Dir, Comm on Professional & Hospital Activities, 211 First Natl Bldg, Ann Arbor, Mich / A / '17, Washington Univ Sch of Medicine, '52, physician / 6t

Smith, A C / Mathn, Computing Devices of Canada, Ltd, P O Box 508, Ottawa, Ont, Canada / ALMP / '26, Natl Univ of Ireland, '56, - / 6

Smith, Edgar L, Jr / Mathn, IBM Corp, 1111 Connecticut Ave, Washington, D C / ALMP / '11, Harvard, NYU, '51, prgmr / 6t

Smoliar, Gerald / Staff Conslnnt, Remington Rand UNIVAC, Div Sperry Rand Corp, 2300 W Allegheny Ave, Philadelphia, Pa / D / '17, Univ of Penna, '47, elec engr, author / 6

Spence, Homer W / Chief Compr Res Branch, Comptg Lab, Ballistic Res Labs, Aberdeen Proving Grounds, Md / DEL / '16, Michigan State Univ, '45, elecnc scientist / 6t

Stanko, Edward / Mgr Engrg Sect, RCA Service Co, Bldg 203-3, Cherry Hill, Camden, N J / BCE / '01, College of South Jersey, '50, patents, author many articles / 6

Steele, T Corwin / Sec-Cmptlr, Royal-Liverpool Insurance Group, 150 William St, N Y 39, N Y / ABEP / '06, NYU, '52, insurance / 6t

Stein, Mordecai / Elecnc Engr, National Bureau of Standards, Washington 25, D C / ACDEL, input-output / '27, George Washington Univ, Univ of Maryland, '50, elecnc engr / 6

Stott, Charles B / Proj Engr, IBM Corp, Dept 280, Endicott, N Y / ACDEL / '24, Tufts Univ, '49, elecnc design / 6

Strahl, Robert Earl / Comptg Analyst, Douglas Aircraft Co, 3855 Lakewood Blvd, Long Beach, Calif / BMP / '25, Whittier College, '55, prgmg & analysis / 6

Strong, Jack A / Genl Supv Integrated Data Processg, North American Aviation Inc, Internl Airport, Los Angeles 45, Calif / ABLMP / '19, UCLA, '46, comptg, / 6r

Struven, Warren C / Elecnc Proj Engr, Univ of Calif Radiation Lab, Berkeley 4, Calif / ACDEL / '25, Univ of Calif, '52, compr & data reduction design / 6

Sumner, J S / Aplns Spec, National Cash Register Co, Dayton 9, Ohio / ABPS / -,-,- / 6

Sward, Gilbert L / Proj Mathn, Air Force Armament Center, Hq, AFAC ACUM, Eglin AFB, Florida / MP / '30, Duke Univ, '55, mathn / 6t

(cont'd on page 78)

#### PUBLICATIONS

P 34: LINEAR PROGRAMMING AND COMPUTERS. Reprint of two articles by Chandler Davis, in July and August 1955 "Computers and Automation". A clear, well-written introduction to linear programming, with emphasis on the ideas. . . . \$1.20

P 6: CONSTRUCTING ELECTRIC BRAINS. Reprint of thirteen magazine articles by E.C.Berkeley and R.A.Jensen. Explains simply how an automatic computer is constructed; how to make it add, subtract, multiply, divide, and solve problems automatically, using relays, diodes, or other devices. Contains many examples of circuits. \$2.20

P 32: SYMBOLIC LOGIC, by LEWIS CARROLL. Reprint of "Symbolic Logic, Part I, Elementary," 4th edition, 1897, 240 pages, by Lewis Carroll (C. L. Dodgson). Contains Lewis Carroll's inimitable and entertaining problems in symbolic logic, his method of solution (now partly out of date), and his sketches of Parts II and III, which he never wrote since he died in 1898. ....\$2.50

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= T W V A S	W A S E	E N T N S

WYE = VIF

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 Taylor, Carlis / Tab Supv, Univ of Florida Stat Lab, Box 3568 Univ Stn, Gainesville, Fla / ABLM PS / '22, Univ of Florida, '52, tab supv / 6t  
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 Uscher, Milton / Sr Sys Analyst, Lever Brothers, 390 Park Ave, N Y 22, N Y / ABP / '17, Rensselaer Polytech Inst, NYU, '53, sys analyst / 6t

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Who's Who  
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Ware, Willis H / Asst for Engrg, Numerical Analysis Dept, Rand Corp, 1700 Main St, Santa Monica, Calif / ABCDEL / '20, Princeton, '46, elecnc engr / 6

Warshaw, Michael / Elecnc engr, Rand Corp, 1700 Main St, Santa Monica, Calif / EL / '29, UCLA, '50, engr / 6

Weinberg, David F / -, Ramo-Wooldridge Corp, Los Angeles, Calif / ABMP / '28, UCLA, '52, mathn, sr prgmr / 6t

Weisser, Daniel R / Assoc Engr, IBM Corp, Dept 456 Endicott, N Y / DEL / '28, Gonzaga Univ, '54, engr, component dvlpmnt / 6

Weller, David R / Techl Dir, Mountain Systems, Inc 864 Franklin Ave, Thornwood, N Y / B / '20, Mass Inst of Tech, '49, - / 6t

West, Edward B / Appld Science Repr, IBM Corp, 2601 S Main St, Houston, Texas / AMP / '25, Univ of Missouri, - / 6

West, William P / Assoc Scientist, Leeds & Northrup Co, 4901 Stanton Ave, Philadelphia 44, Pa/ CDE / '06, Clemson College, '54, elec1 engr / 6

White, J Hunter Jr / Dist Appld Science Repr, IBM Corp, 122 E 42nd St, N Y, N Y / ABMS, operations res / '24, Williams, Brown Univ, '50, compr consultant / 6t

Wilkinson, H Malcolm / Mgr Field Serv Dept, Computing Devices of Canada, P O Box 508, Ottawa, Canada / AELS, training / '20, Univ of Toronto, '51, elecnc engr, lecturer on compr logic & design / 6r

Williams, Colin J / Bus Sys Analyst, Computing Devices of Canada, Ltd, P O Box 508, Ottawa, Ont, Canada / ABCDPS / '25, Univ of North Carolina, '53, - / 6

Williams, Norman E / Compr Spec, International Resistance Co, 401 N Broad St, Philadelphia 8, Pa / DEL, components / '25, Columbia, '52, components engr / 6

Williams, Ronald E / Compr Aplns Officer, Chesapeake & Ohio Rwy Co, 400 Terminal Tower, Cleveland, Ohio / ABLP / '26, Univ of Chicago, '51, economist / 6t

Wilson, L S / Aplns Spec, National Cash Register Co, Dayton 9, Ohio / ABPM / -, Univ of Calif, - / 6

Wolff, Allan L / Sales Engr, Bendix Computer Div, 5630 Arbor Vitae St, Los Angeles, Calif / AS / '23, Stanford Univ, '55, sales engr / 6

Wolff, Fred G / Devt Engr, Burroughs Corp Res Cntr, Paoli, Pa / DL, input-output equipment / '23, -, '51, devt engr / 6t

Yowell, E C / Mgr Elecnc Sales, National Cash Register Co, Dayton 9, Ohio / ABPSM / -, Univ of Cincinnati, Columbia Univ, -, - / 6

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### Computers and Automation

Roster of Organizations (cont'd from page 24)  
Jervis B. Webb Co., 8951 Alpine Avenue, Detroit 4,  
Mich. / Webster 3-8010 / \*C

Conveyor engineering and manufacturing.  
Servomechanisms, automatic control machinery,  
automatic materials handling machinery. Ls  
(600) Le(1919) SCMc RMSa

Weems System of Navigation, 227 Prince George St.,  
Annapolis, Md.

Automatic navigation systems. Me Ic RCPM  
Sa

Westinghouse Electric Corp., Analytical Department,  
East Pittsburgh, Pa. / Express 1-2800 / \*C

Electronic and passive element analog computers;  
analog-to-digital conversion equipment;  
automatic control devices. DC and AC  
calculating boards (network analyzers); ANA-  
COM computer. Installing IBM Type 704 EDPM.  
Dynamic analyses of physical systems, in-  
cluding transient phenomena in mechanical and  
electrical systems; servomechanisms, and reg-  
ulating systems; nuclear reactor calculations;  
field mapping; operations research. Comput-  
ing service: digital and analog. Ls (cor-  
poration, 100,000; dept., 50) Se(dept., 1952)  
DASc RMSCPa

Wharf Engineering Labs., Fenny Compton, Warwick-  
shire, England / Fenny Compton 30 / \*C

Magnetic drums, recording heads, transform-  
ers. Ss(15) Se(1949) Ic RMSa

Wiancko Engineering Co., 255 North Halstead Avenue,  
Pasadena, Calif.

Digital ballistics analyzer computer, com-  
puter components, etc. ?s ?e DAIC RMSa

### Z

Zator Co., 79 Milk St., Boston 9, Mass. / Liberty  
2-4624 / \*C

Digital equipment and systems for coding,  
filing, and finding information (Zato coding  
systems). High-speed selectors for notched  
cards. Methods for use of digital computing  
machines to recover information. Ss Se  
(1947) Ic RCSa

Zeuthen & Aagaard Ltd., 6 Esplanaden, Copenhagen,  
Denmark / Central 3795 / \*C

Portable adding machine (Contex); dictating  
machine (Rex-Recorder) with magnetic record-  
ing on plastic disc using impregnated parti-  
cles and permitting more than 10,000 reuses;  
duplicating machines, etc. Ls Le Ic RMSa

Konrad Zuse, Kreis Hünfeld No. 69, Neukirchen,  
Germany

Electronic digital computers. Has made Zuse  
Model IV and V computers. Ss(90) Se(1949)  
Dc RMSa

Who's Who (cont'd from page 78)

### Z

Zaphyr, Peter A / Mathn, Westinghouse Electric Corp.,  
E. Pittsburgh, Pa / MP / '26, Univ of Pittsburgh,  
'52, apd math, papers / 6  
Semanek, H / Dr. Techn, Technical University Vienna,  
Gussausstr 25, Vienna IV, Austria / ACDEL,  
teaching / '20, Tech Univ Vienna, '49, asst at  
Tech Univ Vienna / 6t  
Ziegler, J R / Aplns Spec, National Cash Register  
Co, Dayton 9, Ohio / ABPSM / -, UCLA, -, - /  
6  
Zimmermann, George / Mgr, Sales Engrg Serv, Rem-  
ington Rand, Div Sperry Rand Corp, 315 Fourth  
Ave, N Y 10, N Y / - / -, Fordham Univ, '50, -  
/ 6  
Zipf, A R / Asst Vice-Pres, Bank of America NT &  
SA, 300 Montgomery St, San Francisco, Calif /  
- / -, -, - / 6t

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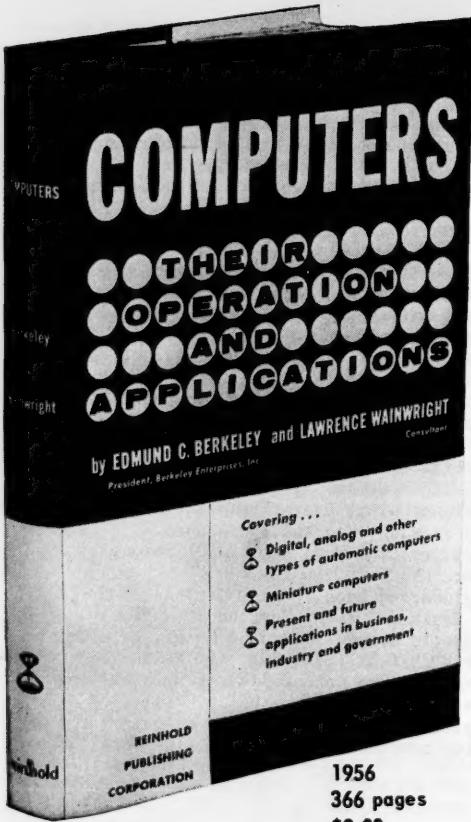
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Training for Automatic Computers  
Simon — Its History and Main Features  
Simon — Numbers, Operations and Programming  
How Simon is Constructed
6. SOME LARGE-SCALE AUTOMATIC DIGITAL COMPUTERS  
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IBM Type 701, 702 and 705  
ERA Type 1103
7. APPLICATIONS OF AUTOMATIC COMPUTING MACHINES  
Whose Work Can Automatic Computers Do?  
What People Will Buy Automatic Computers?  
The Attitudes of Prospective Buyers Towards Automatic Computing Machines  
Applications of Automatic Computing Machines in Business  
Military Applications of Analog Computers  
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The following is a compilation of patents pertaining to computers and associated equipment from the Official Gazette of the United States Patent Office, dates of issue as indicated. Each entry consists of: Patent number / inventor(s) / assignee / invention.

March 6, 1956: 2,737,342 / Dale H. Nelson, Southhampton, N.Y. / The Teleregister Corp., New York, N.Y. / A rotary magnetic data storage system.

2,737,344 / Lewis M. Mott-Smith, Houston, Tex., and Bernard R. Rumbutis, Rochester, N.Y. / - / A range and range-rate indicating unit.

2,737,582 / Frank Ross Hall, Roseville near Sydney, New South Wales, Aus. / Amalgamated Wireless Lim., Sydney, New South Wales, Aus. / An automatic gain control arrangement for pulse signalling system.

2,737,583 / Horatio N. Crooks and Linder C. Hobbs, Haddonfield, N. J. / Radio Corp. of America, Del. / A signal responsive circuit.

2,737,615 / John W. Roby Jr., and Max E. Snoddy, Dallas, Tex. / An electrical control circuit for sensing a variable electrical resistance and operating an electrical device when the value of the electrical resistance falls within a predetermined range of values.

March 13, 1956: 2,738,131 / Hermann Henke, Stein am Rhine, Switz. / ---- / A record controlled counting circuit.

2,738,382 / Chester E. Brooks, Montvale, John H. Mc Guigan, Summit, N. J., and Orlando J. Murphy, New York, N. Y. / Bell Telephone Lab., Inc., New York, N. Y. / A magnetic drum dial pulse recording and storage registers.

2,738,424 / Wilfrid Sinden Mortley, Great Baldow, Eng. / Marconi's Wireless Telegraph Co., Lim., London, Eng. / A pulse controlled oscillator arrangement.

2,738,461 / Donald W. Burbeck, Los Angeles, Calif., and Herbert B. Brooks, Prescott, Ariz. / Hughes Aircraft Co., Del. / A method and apparatus for measuring time intervals.

2,738,464 / Roy Chester Abbott, Audubon, N. J. Radio Corp. of America, Del. / A voltage divider network.

2,738,493 / Theodore J. Mesh, Easthampton, Mass. / Gilbert and Barker Manufacturing Co., West Springfield, Mass. / A coarse and fine follow-up measuring system.

2,738,498 / Werner Liebknecht, Schaan, Liechtenstein / C. Lorenz Aktiengesellschaft, Stuttgart-Zuffenhausen, Ger. / A random digit selecting system of the process for the automatic production of scrambled impulse and signal sequences.

2,738,504 / John W. Gray, White Plains, N.Y. / General Precision Laboratory Inc., N. Y. / A digital number converter.

March 20, 1956: 2,739,190 / Robert L. Wallace, Jr., Plainfield, N. J. / Bell Telephone Lab., Inc., New York, N. Y. / A transistor amplifier and circuit arrangement therefor.

2,739,191 / Thomas C. Wisenbaker, Woodland Hills, Calif., and Martin R. Richmond, Cambridge, and Benjamin R. Cole, Waltham, Mass. / Raytheon Manufacturing Co., Newton, Mass. / A clipping amplifier for signals with a small degree of modulation.

2,739,233 / Joseph F. Clayton, Detroit, Mich. / Bendix-Aviation Corp., Detroit, Mich. / A pulse forming circuit.

2,739,234 / William D. Houghton, Princeton, N. J. / Radio Corp. of America, Del. / A step wave generator.

2,739,235 / George V. Sande, Greece, N. Y. / General Railway Signal Co., Rochester, N. Y. / A gas discharge tube binary device.

2,739,236 / Arthur W. Holt, Mount Rainier, Md. / U.S.A. / Dynamic biasing for binary pulse amplifiers.

2,739,237 / Joseph J. Stone, Jr., Clinton, Tenn. / U.S.A. / A gated amplifier circuit for selectively amplifying pulses from different sources.

2,739,240 / William L. Hughes, Ames, Iowa / Iowa State College Research Foundation, Inc., Ames, Iowa / An apparatus for dividing by an even integer the frequency of an applied periodic voltage.

2,739,266 / Lionel Clifford Burnett, Beeston, Eng. / Ericsson Telephones, Lim., London, Eng. / An electronic counting or registering arrangement.

2,739,299 / William H. Burkhart, East Orange, N. J. / Monroe Calculating Machine Co., Orange, N. J. / A magnetic storage system for computers and the like.

2,739,300 / Munso King Haynes, Poughkeepsie, N. Y. / International Business Machines Corp., New York, N. Y. / A magnetic element memory matrix.

(cont'd on page 84)

ENGINEERS

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In Canada: Rogers Majestic Electronics Limited, 11-19 Brentcliffe Road, Leaside, Toronto 17.

Patents (cont'd from page 82)

2,739,301 / Alexander Greenfield, Detroit, Mich. / Bendix Aviation Corp., Detroit, Mich. / A checking circuit for correct number of received information pulses.

March 27, 1956: 2,739,572 / Stanley H. Page/ Los Gatos, Calif. / - / A follow-up device.

2,740,045 / Maurice E. Bivens, Schenectady, N. Y. / General Electric Co., N. Y. / An impulse counting circuit.

2,740,078 / Louis W. Herchenroeder and Martin H. Fisher, Pittsburgh, Pa. / Westinghouse Electric Corp., East Pittsburgh, Pa. / A current limit and inertia compensation apparatus.

2,740,082 / Hugh Brougham Sedgfield, Oakland, Hampton, Eng. / The Sperry Gyroscope Co., Lim., Brentford, Eng. / A servo system for controlling a variable.

2,740,084 / Harold G. Haas, Belleville, N. J./ Bendix Aviation Corp., Teterboro, N. J. / A voltage regulating system.

2,740,085 / George A. Phelan, East Orange, N. J. / Bendix Aviation Corp., Teterboro, N. J. / A voltage regulating system.

2,740,091 / Frederick S. Goulding, Deep River Ontario, Canada / The National Research Development Corp., London, Eng. / A means for measuring time intervals.

2,740,294 / Royden C. Sanders, Jr., Lexington, and Daniel Blitz, Boston, Mass. / Raytheon Manufacturing Co., Newton, Mass. / A wind drift computer.

2,740,301 / Stanley J. Gartner, Emporium, Pa. Sylvania Electric Products Inc., Mass. / An indexing mechanism.

2,740,583 / William H. T. Holden, Woodside, N. Y. / Bell Telephone Lab. Inc., New York, N. Y. / A resolving and integrating arrangement.

2,740,584 / George Thomas Jacobi and Herman D. Parks, Schenectady, N. Y. / General Electric Co., N. Y. / A simultaneous linear equation computer.

2,740,838 / John R. Pierce, Berkeley Heights, N. J. / Bell Telephone Lab. Inc., New York, N. Y. / A pulse transmission system.

2,740,847 / Bernard S. Cahill, Chicago, Ill. / Consolidated Electric Co., Chicago, Ill. / An apparatus for controlling amplifier tubes.

2,740,888 / Arthur S. Zukin, Los Angeles, Calif. / Hughes Aircraft Co., Del. / A diode gating circuit for selectively passing applied electrical pulses in response to a predetermined voltage level of a variable voltage level control signal.

April 10, 1956: 2,741,428 / Peter Elias, Cambridge, Mass. / - / A computing device for continuously determining the instantaneous value of the product of two independent variables.

2,741,733 / Paul A. Noxon, Tenafly, and Alan M. MacCallum, Maywood, N. J. / Bendix Aviation Corp., Teterboro, N. J. / A positioning system monitor.

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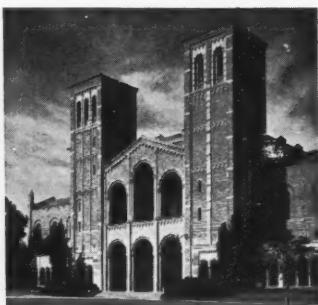
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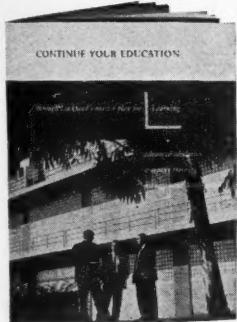
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## ROSTER OF AUTOMATIC COMPUTERS

(Cumulative, information as of May 3, 1956)

The purpose of this list is to report automatic computers in existence (all that are known to us). Each entry, when complete, gives: name of computer (and interpretation of letters in its name)/maker and place where made; if quantity is 1 or 2, place where computer is located / purpose of computer, nature of computer, approximate size or capacity of computer, and quantity of computer in existence. Some words like "Model" and "Type" have been omitted from names of computers; usually the initial letters of the company name have been substituted.

If only the name of the computer has been learned, a reference where the computer is mentioned or described is given.

In most cases the maker of the computer is the key to more information about the computer; the maker may be looked up in the "Roster of Organizations in the Computer Field" which we publish (see Part 1 of this issue).

Abbreviations: The key to the special abbreviations follows:

Purpose (p)

Gp General purpose  
Sp Special purpose

Nature of Computer (c)

Dc Digital computer  
Ac Analog computer  
Ec Electronic computer  
Rc Relay computer  
Mc Mechanical computer

Size (s)

Ss Small size or low capacity  
Ms Medium size or medium capacity  
Ls Large size or large capacity

Quantity (q)

0q Zero (i.e., unfinished or dismantled)  
1q One  
2q Two  
Sq Small quantity, about 2 to 6  
Mq Medium quantity, about 7 to 30  
Lq Large quantity, over 30  
?q Unknown quantity

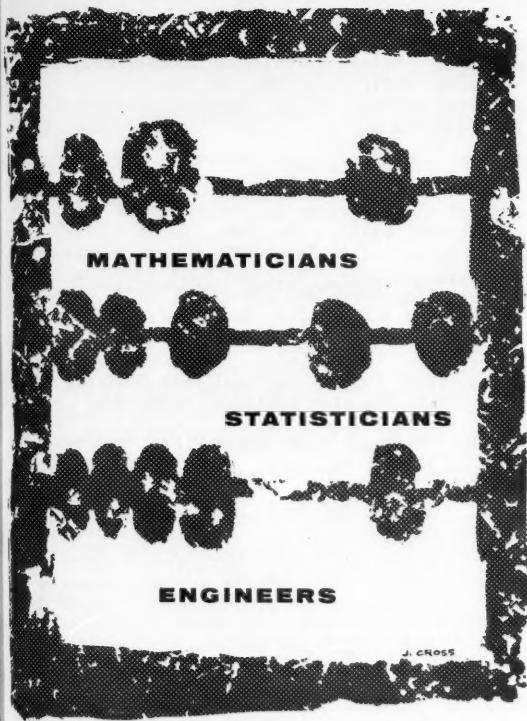
Some other abbreviations have been used which can be easily guessed, like those in a telephone book.

We plan to keep this list up to date from time to time.

We shall be very grateful for any information which any reader is able to send us, especially in regard to computers outside the United States, for which our sources of information are sporadic.

### ROSTER

ABC (Automatic Binary Computer) / Air Force Cambridge Research Center, Cambridge, Mass.; located there / Gp EDC Ms 1q  
Abel — same as the ONR Relay Computer, which see  
Ace (Automatic Computing Engine — pilot model) / National Physical Laboratory, Teddington, England; located there / Gp EDC Ms 1q  
Ace (Automatic Computing Engine — engineered model) — SEE Deuce  
Adec (Aiken Dahlgren Electronic Calculator) — SEE Harvard Mark III  
Aeracom (Bureau of Aeronautics Analog Computer) / Aerial Measurements Laboratory, Northwestern Univ., Evanston, Ill; located there / Gp EAC Ls 1q  
Aiken Dahlgren Electronic Calculator — SEE Harvard Mark III  
Alwac (Axel Wenner-Gren Automatic Computer / Logistics Research Inc., Redondo Beach, Calif / Gp EDC Ss Sq  
Alwac III (Axel Wenner-Gren Automatic Computer III) / Logistics Research Inc., Redondo Beach, Calif / Gp EDC Ss Sq (Over 4)  
Amos (Automatic Computer Ministry of Supply) — a Ferranti computer; see Ferranti  
Anacom (Analog Computer) / Westinghouse Electric Co., Pittsburgh; located there / Gp EAC Ls 1q  
Analog Computer / Électricité de France, France; located there / Gp Ac ?s 1q  
Analog Computer / Electronic Associates, Long Branch, N J / Gp EAC Ls Mq  
Analog Computer / Technische Hochschule, Darmstadt, Germany; located there / Gp EAC ?s 1q  
Answer (Analog Simulator and Computer) 300-A / Davies Laboratories, Inc, Riverdale, Md / Sp EAC ?s 0q  
AN/UJQ-2(xA-1) — see Haller, Raymond and Brown  
Apero (All Purpose Electronic (Rayon) Computer) Birkbeck College, London, England; located at British Rayon Research, Manchester, England / Gp EDC Ms 1q  
Apxec (All Purpose Electronic X-ray Computer / Birkbeck College, Univ of London, London, England; located there / Gp EDC Ms 1q  
Arc (Automatic Relay Computer) / Birkbeck College, Univ of London, London, England; located there / Gp RDC Ms 1q  
Armac (Automatische Rekenmachine Mathematisch Centrum) / Mathematisch Centrum, Amsterdam, the Netherlands; located there / Gp EDC ?s 1q  
Arra (Automatische Relais Rekenmachine Amsterdam) / Mathematisch Centrum, Amsterdam, the Netherlands; located there / Gp RDC Ls 1q  
Ascc (Automatic Sequence Controlled Calculator) — SEE: IBM Harvard Automatic Sequence Controlled Calculator, or Harvard Mark I  
Avidac (Argonne Version Institute's Digital Automatic Computer) / Argonne National Laboratory, (cont'd on page 88)



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## COMPUTER PROGRAMMING

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At MIT's Lincoln Laboratory in Lexington, RAND is developing computer programs for the new SAGE continental air-defense system. Perhaps the most advanced and comprehensive effort toward complete automation thus far attempted, the SAGE system is centered around the largest, most intricate digital computers yet designed. In Santa Monica, RAND's System Development Division is using IBM's 701 and 704 computers in a scientific program for the Air Defense Command.

\*The RAND Corporation is a non-profit organization engaged in research concerned with national security.

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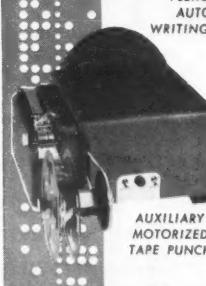
The Auxiliary Motorized Tape Reader reads punched tape to direct the automatic operation of other equipment.

### FLEXOWRITER FEATURES

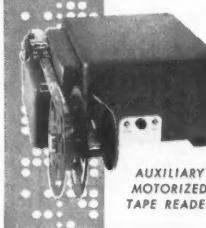
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Sales and Service offices in principal cities listed in classified telephone directory under "Typewriters-Automatic".

(cont'd from page 86)

Automatic Computers

Chicago; located there / Gp EDc Ls 1q  
Baeqs (Bid-Asked Electronic Quotation System) / The  
Teleregister Corporation, Stamford, Conn.; lo-  
cated at Toronto Stock Exchange, Toronto, Ont.,  
Can. / Sp EDc Ms ?q  
Barber-Colman-Stibitz Decimal Digital Computer /  
Barber-Colman Co., Rockford, Ill; located there  
/ Gp EDc Ss 1q  
Bark (Binary Automatic Relay "K"omputer) / Swedish  
Board for Computing Machines, Drottninggatan 95  
A, Stockholm, Sweden; located there / Gp RDc  
Ls 1q  
Beac (Boeing Electronic Analog Computer) / Boeing  
Airplane Co., Seattle / Gp EAc Ms Mq  
Bell Model V / Bell Telephone Labs, New York; both  
located at Ballistic Research Laboratories, Ab-  
erdeen Proving Ground, Aberdeen, Md / Gp RDc  
Ls 2q  
Bell Model VI / Bell Telephone Labs, Murray Hill,  
N J ; located there / Gp RDc Ms 1q  
Bendix Digital Differential Analyzer D 12 / Bendix  
Computer Div, Bendix Aviation Corp, Los Angeles  
Calif. / Sp EDAc Ss Sq(at least 2; on order,  
over 6)  
Bendix G-15A / Bendix Computer Div, Bendix Avia-  
tion Corp, Los Angeles, Calif / Gp EDc Ss Sq  
Bendix G-15D / Bendix Computer Div, Bendix Avia-  
tion Corp, Los Angeles, Calif / Gp (digital dif-  
ferential analyzer) EDAc Ms ?q  
Bsm (Russian initials for "high speed electronic  
computing machine") / ?, Moscow or Leningrad,  
U.S.S.R.; located where built / Gp EDc Ls 1q  
Besk (Binar Elektronisk Sekvens-Kalkylator) /  
Swedish Board for Computing Machines, Drottning-  
gatan 95A, Stockholm, Sweden; located there /  
Gp EDc Ls 1q  
Binac (Binary Automatic Computer) / Eckert-Mauchly  
Div., Remington-Rand, Phila, Pa; located at Nor-  
throp Aircraft, Hawthorne, Calif. / Gp EDc Ss  
1q  
Bizmac (Business and Management Automatic Computer)  
/ Radio Corporation of America, Camden, N.J. ;  
located at U.S. Army Ordnance Tank and Auto-  
motive Command, Detroit, Mich. / Gp EDc Ls 1q  
Burroughs E 101 (Burroughs Desk Size Electronic  
Computer) / Burroughs Corp, Phila., Pa. / Gp EDc  
Ss Sq(at least 2; on order, over 20)  
Burroughs Laboratory Computer / Burroughs Corpora-  
tion, Philadelphia, Pa / Gp EDc Ls 0q (dis-  
mantled)  
Burroughs Unitized Digital Electronic Computer /  
Burroughs Corp, Philadelphia, Pa.; located at  
Wayne Univ, Computation Lab, Detroit, Mich. /  
Gp EDc Ls 1q  
Cadic -- SEE CRC  
Caldic (California Digital Computer) / Univ of  
Calif., Dept. of Engrg., Berkeley, Calif., lo-  
cated there// Gp EDc Ms 1q  
Careddol () / Institut d'Astrophysique, Paris,  
France; located there / Gp Ac ?s 1q  
CEC 30-201, CEC 36-101 -- SEE Datatron  
Circle Computer / Hogan Labs, New York, & Nuclear  
Development Assoc., White Plains, N.Y. / Gp EDc  
Ss Sq  
Computer / Dynamic Analysis and Control Laboratory  
Mass. Inst. of Technology, Cambridge, Mass.;  
located there / Gp EAc Ls 1q  
Computer / Electronics Div, AERE, Harwell, Eng-  
land; located there / EDc  
Computer / Naval Special Devices Center, Pt. Wash-  
ington, N.Y.; located there / Gp Dc Ls 1q

Computyper / Friden Calculating Machine Co., San  
Leandro, Calif / Gp MDc Ss ?q  
Conac (Continental Oil Co. Automatic Computer) /  
Continental Oil Co., ?, Oklahoma; located there  
/ Sp EDc Ss 1q  
CRC -- SEE Also NCR-CRC  
CRC 101 (Computer Research Corporation 101) / Na-  
tional Cash Register Co., Electronics Division,  
Hawthorne, Calif. / Sp EDc ?s ?q  
CRC 102 (also called Cadac 102; Computer Research  
Corporation 102) / National Cash Register Co.,  
Electronics Division, Hawthorne, Calif.; located  
at Project Lincoln, Mass. Inst. of Technol-  
ogy, Bedford Airport, Mass. / Gp EDc Ls 1q  
CRC 102A (also called Cadac 102A; Computer Research  
Corporation 102A) / National Cash Register Co.,  
Electronic Computer Division, Hawthorne, Calif.  
/ Gp EDc Ls Mq  
CRC 102D / National Cash Register Co., Electronic  
Computer Div., Hawthorne, Calif. / Gp EDc Ls  
Sq  
CRC 105 (Computer Research Corporation 105) / Na-  
tional Cash Register Co., Electronics Div, Haw-  
thorne, Calif. / Sp (decimal digital differ-  
ential analyzer) EDc Ls Mq  
CRC 106 (Computer Research Corp. 106) (also called  
"Whitesac") / National Cash Register Corp., Elec-  
tronics Division, Hawthorne, Calif.; located  
at White Sands Proving Ground, N.M. / Gp EDc  
Ms 1q  
CRC 107 (Computer Research Corporation) / Nation-  
al Cash Register Co., Electronics Div., Haw-  
thorne, Calif. / Gp EDc Ls Sq  
CSIRO Mark I / Radiophysics Div., Commonwealth  
Scientific and Industrial Research Organization,  
Sydney, Australia; located there / Gp RDC Ms  
1q  
Cuba (Calculator Universel Binaire de l'Armement)  
/ Societe d'Electronique et d'Automatisme, Paris  
France; located at Laboratoire Central de l'  
Armement, Paris, France / Gp EDc Ls 1q  
D1 (Dresden No. 1) / Technische Hochschule, Dres-  
den, Germany; located there / Gp Dc ?s 1q  
Datatron (formerly called CEC 30-201, CEC 36-101,  
ElectroData Systems, etc.) / ElectroData Corp.,  
(affiliate of Consol. Engrg. Corp.), Pasadena,  
Calif. / Gp EDc Ms Mq(at least 16)  
Davis Computer / USAF Inst. of Tech., Wright-Pat-  
terson Air Force Base, Dayton, Ohio; located  
there / Sp EAc Ms 1q  
Dera (Darmstadt Electronic....?) / Technische  
Hochschule, Darmstadt, Germany; located there  
/ Gp EDc ?s 1q  
Deuce (production model of Ace) / English Electric  
Co., Stafford, England / Gp EDc Ms ?q  
Diad (Drum Information Assembler and Dispatcher)  
/ Bell Telephone Labs., Murray Hill, N.J.; lo-  
cated there / Sp Dc Ls 1q  
Differential Analyzer / Institut Boris Kidric,  
Belgrade, Yugoslavia; located there / Gp Ac  
?s 1q  
Differential Analyzer / General Electric Co.,  
Schenectady; located there / Gp MAc Ls 1q  
Differential Analyzer / Moore School of Electri-  
cal Engrg., Univ. of Pa., Philadelphia, Pa.;  
located there / Gp MAc Ls 1q  
Differential Analyzer No. 1 / M.I.T. Electrical  
Engrg. Dept., Mass. Inst. of Technology, Cam-  
bridge, Mass.; located at Wayne Univ. Compu-  
tation Laboratory, Detroit, Mich. / Gp MAc Ls  
0q (discontinued)

{cont'd on page 90}

## M A N U S C R I P T S

We are interested in articles, papers, reference information, science fiction, and discussion relating to computers and automation. To be considered for any particular issue, the manuscript should be in our hands by the fifth of the preceding month.

Articles. We desire to publish articles that are factual, useful, understandable, and interesting to many kinds of people engaged in one part or another of the field of computers and automation. In this audience are many people who have expert knowledge of some part of the field, but who are laymen in other parts of it. Consequently a writer should seek to explain his subject, and show its context and significance. He should define unfamiliar terms, or use them in a way that makes their meaning unmistakable. He should identify unfamiliar persons with a few words. He should use examples, details, comparisons, analogies, etc., whenever they may help readers to understand a difficult point. He should give data supporting his argument and evidence for his assertions. We look particularly for articles that explore ideas in the field of computers and automation, and their applications and implications. An article may certainly be contro-

versial if the subject is discussed reasonably. Ordinarily, the length should be 1000 to 4000 words. A suggestion for an article should be submitted to us before too much work is done.

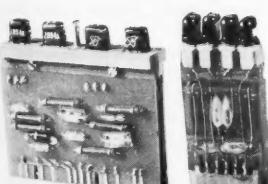
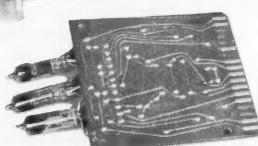
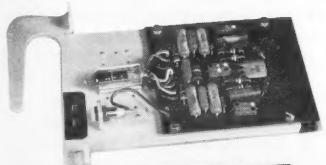
Technical Papers. Many of the foregoing requirements for articles do not necessarily apply to technical papers. Undefined technical terms, unfamiliar assumptions, mathematics, circuit diagrams, etc., may be entirely appropriate. Topics interesting probably to only a few people are acceptable.

Reference Information. We desire to print or reprint reference information: lists, rosters, abstracts, bibliographies, etc., of use to computer people. We are interested in making arrangements for systematic publication from time to time of such information, with other people besides our own staff. Anyone who would like to take the responsibility for a type of reference information should write us.

Fiction. We desire to print or reprint fiction which explores scientific ideas and possibilities about computing machinery, robots, cybernetics, automation, etc., and their implications.

(cont'd on page 93)

# COMPUTER SYSTEMS



Sylvania's Electronic Systems Division specializes in the design development and construction of complex electronic equipment. Computer systems have been built for such applications as general purpose computation, real time data processing, and use in special purpose airborne equipment. Equipments built using subminiature tubes and etched circuit construction have met the requirements of military field use. Conservative design practice has resulted in equipments which operate with extreme reliability at well over one megacycle.

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**SYLVANIA ELECTRIC PRODUCTS INC.**

ELECTRONIC SYSTEMS DIVISION  
100 FIRST AVENUE, WALTHAM 54, MASS.



(cont'd from page 88)

Differential Analyzer No. 2 / Electrical Engrg Dept, Mass. Inst. of Technology, Cambridge, Mass; located there / Gp EAc Ls 0q(dismantled)

Djinn / Laboratoires Derveaux, France; located there / Gp Ac ?s 1q

Dyseac ("di-" -second - Standards Eastern Automatic Computer) / National Bureau of Standards, Washington; mounted on a truck / Gp EDc Ls 1q

Ease (Electronic Analog Simulating Equipment) / Berkeley Division, Beckman Instrument Co., Richmond, Calif. / Gp EAc ?s Mq

Easiac (Easy Instruction Automatic Computer) -- a pseudocomputer realized by means of a translating and interpreting routine in Midac, which see.

Edsac / Univ. Mathematical Lab., Cambridge, England; located there / Gp EDc Ls 1q

Edvac (Electronic Discrete Variable Automatic Computer) / Moore School of Electrical Engrg., Univ of Pa., Philadelphia, Pa.; located at Ballistic Research Labs, Aberdeen Proving Ground, Aberdeen, Md. / Gp EDc Ls 1q

Elecom-50 (Electronic Computer 50) / Underwood Corp., Electronic Computer Division, Long Island City 6, N.Y. / Gp EDc Ss Sq(at least 2; on order, over 15)

Elecom 100 (Electronic Computer 100) / Underwood Corp., Electronic Computer Division, Long Island City 6, N.Y. / Gp EDc Ss Sq(at least 3)

Elecom 120, 120A (Electronic Computer 120, 120A) / Underwood Corp., Electronic Computer Division Long Island City 6, N.Y. / Gp EDc Ms Sq(at least 5)

Elecom 125 (Electronic Computer 125) / Underwood Corp., Electronic Computer Div., Long Island 6, N.Y. / Gp EDc Ms 0q(on order, at least 4)

Elecom 125FP (Electronic Computer 125, File Processor) / Underwood Corp., Electronic Computer Div., Long Island City 6, N.Y. / Gp EDc Ss Sq

Elecom 200 (also called Ordifac) / Underwood Corp., Electronic Computer Division, Long Island City 6, N.Y.; located at Letterkenny Ordnance Depot, Chambersburg, Pa. / Gp EDc Ms 1q

Elliot 402 / Elliott Brothers, Computing Machine Division, Borehamwood, Herts, England / Gp EDc Ls ?q

Elliott-NRDC Computer 401 Mark 1 / Elliott Brothers Research Labs, Borehamwood, Herts, England; located there / Gp EDc Ls 1q

Eniac (Electronic Numerical Integrator and Calculator) / Moore School of Electrical Engrg., Univ of Pa., Philadelphia, Pa., and Ballistic Res. Labs., Aberdeen, Md; located at Ballistic Research Labs., Aberdeen / Gp EDc Ls 1q

ERA 1101, 1102, 1103, 1103A -- See Univac Scientific Computer

Erma (Electronic Recording Machine -- Accounting) / Stanford Research Institute, Menlo Park, Calif. (developer), and General Electric Co., Electronics Division, Syracuse, N.Y. (manufacturer / Sp EDc Ls ?q)

Ermeth (?) / Swiss Federal Institute of Technology Zurich, Switz.; located there / Gp EDc Ms Mq

Ferranti Mark I / Ferranti, Ltd., Ferranti Electric Inc., New York 20, N.Y. / Gp EDc Ls Mq (at least 7; on order, at least 2)

Ferranti Mark II / Ferranti Ltd., Ferranti Electric, Inc., New York, N.Y. / Gp EDc Ls 1q (on order, at least 3)

#### Automatic Computers

Ferut -- the Ferranti computer at the University of Toronto; SEE Ferranti

F.I.A.T. Analog Computer / F.I.A.T., Turin, Italy / Gp Ac ?s 1q

Flac (Florida Automatic Computer) / U.S. Air Force Missile Test Center, Patrick AFB, Fla.; located there / Gp EDc Ls 1q

G 1 (Gottingen) / Max-Planck-Institut fur Physik, Gottingen, Germany; located there / Sp EDc Ss 1q

G 2 (Gottingen) / Max-Planck-Institut fur Physik, Gottingen, Germany; located there / Gp EDc Ls 1q

Gamma 3 / Compagnie des Machines Bull, Paris, France / Gp EDc Ms Mq

GEDA (Goodyear Electronic Differential Analyzer) L2, L3, N3 (linear and non-linear models) / Goodyear Aircraft Corp., Akron, Ohio / Gp EAc ?s ?q

Haller Raymond and Brown Computer / Haller Raymond and Brown, Inc., State College, Pa.; located there / Sp(simultaneous linear algebraic equations) EDc Ms 1q

Harvard Mark I -- SEE: IBM Automatic Sequence Controlled Calculator

Harvard Mark II / Harvard Computation Laboratory, Cambridge, Mass.; located at Naval Proving Ground, Dahlgren, Va. / Gp RDc Ls 1q

Harvard Mark III / Harvard Computation Laboratory, Cambridge, Mass.; located at Naval Proving Ground, Dahlgren, Va. / Gp EDc Ls 1q

Harvard Mark IV / Harvard Computation Laboratory, Cambridge, Mass.; located there / Gp EDc Ls 1q

Harwell Computer / Atomic Energy Research Establishment, Harwell, Berkshire, England; located there / Sp REDc (dekatrons) Ms 1q

HEC (Hollerith Electronic Computers) 1 and 2 / British Tabulating Machines Co., London, England / ?p ?c ?s ?q

Hitachi Electronic Analog Computers / Hitachi Central Research, Tokyo, Japan / Gp EAc Ss ?q

Hollerith 506 Multiplying Punch / British Tabulating Machines Co., London, England / ?p Dc Ss ?q -- SEE also HEC

Hughes AAC MOD III (Advanced Airborne Computer, Modification III) / Hughes Aircraft Co., Culver City, Calif. / GSp EDc Ms ?q

Hughes Airborne Control Computer / Hughes Aircraft Co., Culver City, Calif. / GSp EDc Ms ?q

Hurricane Computer -- SEE: Raydac

IAS Computer -- SEE: Inst for Advanced Study Computer

IBM 602A (Calculating Punch) / International Business Machines Corp., New York / Gp (short sequences) RDc Ss Lq

IBM 604 (Electronic Calculating Punch) / International Business Machines Corp., New York / Gp

IBM 607 (Electronic Calculator) / International Business Machines Corp., New York / Gp (140 program steps) EDc Ss Lq (over 200)

IBM 608 (Transistor Calculator) / International Business Machines Corp., New York / Gp EDc Ss Lq (prototype)

IBM 650 (IBM Magnetic Drum Data Processing Machine) / International Business Machines Corp., New York / Gp EDc Ms Lq (over 100; on order, over 700)

IBM 701 (Electronic Data Processing Machine for Scientific Purposes) / International Business

(cont'd on page 92)

## ROBOT SHOW STOPPERS

Did you see our story in Life Magazine, March 19, pp 173-176?

From time to time you may need to help organize a display in a business show including some device that you hope will "STOP" every person attending the show and make him notice your display — a device which may be called a "SHOW-STOPPER".

In addition to publishing the magazine "COMPUTERS AND AUTOMATION", we have for six years been developing and constructing "ROBOT SHOW-STOPPERS", small robot machines that respond to their environment and behave by themselves. Two of them are:

**RELAY MOE:** A machine that will play the game Tit-Tat-Toe with a human being, and either win or draw all the time, or (depending on the setting of a switch) will sometimes lose, so as to make the game more interesting for the human being (was at the I.R.E. Show, in Guardian Electric's exhibit; see picture in Life Magazine);

**SQEE:** An electronic robot squirrel that will hunt for a "nut" indicated by a person in the audience, pick it up in his "hands", take the nut to his "nest", there leave it and then hunt for more nuts (see picture in Life Magazine);

Besides these we have other small robots finished or under development. These machines may be rented for shows under certain conditions; also, modifications of the small robots to fit a particular purpose are often possible.

To: Berkeley Enterprises Inc.,  
815 Washington St., R162  
Newtonville 60, Mass.

Please send us more information about your ROBOT SHOW STOPPERS. The advertising application we have in

mind is: \_\_\_\_\_

From: (Organization)

(Address)

(Filled in by: Name, Title, Date)

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P. O. Box 620-K, Springfield, Vermont, U.S.A.  
- 9 DIVISION OF BRYANT CHUCKING GRINDER CO.

(cont'd from page 90)

### Automatic Computers

Machines Corp., New York / Gp EDc Ls Mq(19)  
IBM 702 (Electronic Data Processing Machine for Business Purposes) / International Business Machines Corp., New York / Gp EDc Ls Mq(at least 14)  
IBM 703 (Electronic Data Processing Machine for File Maintenance) / International Business Machines Corp., New York / Sp EDc Ls ?q  
IBM 704 (Electronic Data Processing Machine for Scientific Purposes) / International Business Machines Corp., New York / Gp EDc Ls ?q(at least 1; over 35 on order)  
IBM 705 (Electronic Data Processing Machine for Business Purposes) / International Business Machines Corp., New York / Gp EDc Ls 1q(on order, over 100)  
IBM Automatic Sequence Controlled Calculator, or Harvard Mark I / International Business Machines Corp., Endicott, N.Y., and Harvard Univ., Cambridge, Mass.; located at Harvard Computation Lab., Cambridge, Mass. / Gp RDc Ls 1q  
IBM CPC (Card Programmed Calculator) / International Business Machines Corp., New York, N.Y. / Gp EDc Ms 1q(over 200)  
IBM SSEC (Selective Sequence Electronic Calculator) / International Business Machines Corp., New York, N.Y. / Gp EDc Ls 0q(dismantled)  
Icce (Imperial College Computing Engine) / Imperial College of Science and Technology, London, England; located there / Gp Rc Ls 1q  
IDA Electronic Slide Rule / Computer Corp. of America, N.Y. / Gp EAc ?q ?q  
Illiac (Univ of Illinois Automatic Computer) / Univ of Illinois, Urbana, Ill; located there / Gp EDc Ls 1q  
Institute for Advanced Study Computer / Inst. for Advanced Study, Princeton, N.J.; located there / Gp Edc Ls 1q  
Institut Blaise Pascal Computer / - / referred to in a report by L. Couffignal in the "Proceedings of a Second Symposium", edited by H. H. Aiken, Harvard University Press, 1951, p. 374  
IRSIA-FRNS Computer / Bell Telephone Mfg Co., Antwerp, Belgium; located there / Gp EDc Ls 1q  
Jaincomp A, B, Bl / Jacobs Instrument Co., Bethesda, Md / Sp EDc Ss Sq  
Jaincomp C / Jacobs Instrument Co., Bethesda, Md // Sp EDc Ss 1q  
Jaincomp D / Jacobs Instrument Co., Bethesda, Md / Sp EDc Ss Sq  
Johnniac (John von Neumann Integrator and Automatic Computer) / The Rand Corporation, Santa Monica, Calif.; / located there / Gp EDc Ls 1q (but is one of half a dozen IAS computer types)  
Junior Johnniac -- SEE Rand Junior Johnniac  
Kalin-Burkhart Logical Truth Calculator / T. A. Kalin & W. Burkhart, Cambridge, Mass.; located at Monrobot Corp., Morris Plains, N.J. / Sp Rc Ss 1q  
Larc (Livermore Automatic Research Calculator) / Sperry Rand Corp., New York 10, N.Y. / Gp EDc Ls 0q  
Leo (Lyons Electronic Office) / J Lyons and Co., Ltd., London; located there / Gp EDc(like Edsac) 1s 1q  
LGP 30 (Librascope General Purpose Computer, 30) / Librascope Inc., Glendale, Calif / Gp EDc Ss Sq(at least 3)  
Logistics Computer / Engineering Research Associates Division, Remington Rand, St Paul; located at Logistics Research Project, George Wash- ington Univ., Washington, D.C. / Sp EDc Ls 1q  
Lorpac (Long Range Proving Ground Automatic Computer) -- SEE Flac  
Los Alamos Computer -- same as Maniac, which see  
Luton / English Electric Co., Stafford, England; located there / ?q Ac ?s 1q  
Mac III 3 / Magnavox Research Labs., Los Angeles, Calif / Gp EDc Ms ?q  
Madam -- referred to in "Automatic Digital Computation - Proceedings of a Symposium Held at the National Physical Laboratory", Teddington, England, March 1953, published by H.M. Stationery Office, London, England  
Maddida (Magnetic Drum Digital Differential Analyzer) / Bendix Computer Div., Los Angeles, Calif. / Gp EDAC Ms Sq  
Magic (Magnetic and Germanium Integer Calculator) / Wharf Engrg Laboratories, Fenny Compton, Warwickshire, England / ?p EDc ?s ?q  
Magnefile B (Magnefile System B) / Electronics Corporation of America, Business Machines Division, Cambridge 42, Mass. / Gp EDc Ss ?q  
Magnefile D (Magnefile System D) / Electronics Corp. of America, Business Machines Division, Cambridge 42, Mass. / Sp EDc Ss 1q  
Magnetronic Reservoir / The Teleregister Corp., Stamford, Conn.; located at American Airlines, La Guardia Airport, New York / Sp (reservations inventory) EDc Ls 1q  
Manchester Computer / Univ. of Manchester, Manchester, England; located there / Gp EDc Ls 1q  
Manchester Electronic Computer -- same as Ferranti computer, which SEE  
Maniac (Mathematical Analyzer, Numerical Integrator and Computer) / Univ. of California, Los Alamos Scientific Laboratory, Los Alamos, New Mexico; located there / Gp EDc Ls 1q  
Maniac-II (Mathematical Analyzer, Numerical Integrator, and Computer, ID / Univ. of California, Los Alamos Scientific Laboratory, Los Alamos, N.M.; located there / Gp EDc Ms 1q  
Mark 22 Computer (Bell Telephone Model IV computer) / Bell Telephone Laboratories, New York; located at Naval Research Laboratory, Washington D.C. / Sp RDc Ls 1q  
MDP-MSI-5014 (Mountain Data Processor MSI-5014) / Mountain Systems Inc., Thornwood, N.Y.; located at Hickok Mfg. Co., Rochester, N.Y. / Gp EDc Ss 1q  
Mellon Institute Digital Computer / Mellon Institute of Industrial Research, Univ of Pittsburgh, Pittsburgh, Pa. / Gp EDc Ss 1q  
Midac (Michigan Digital Automatic Computer) / Willow Run Research Center, Univ. of Michigan, Ypsilanti, Mich.; located there / Gp EDc Ls 1q  
Midsac / Willow Run Research Center, Univ. of Michigan, Ypsilanti, Mich.; located there / Gp EDc Ls 1q  
Milac (Miller Analog Computer) / William Miller Instruments, Inc., Pasadena, Calif. / Gp EAc Ls Sq  
Minac (Minimal Automatic Computer) / Digital Computing Group, California Inst. of Technology, Pasadena, Calif. / Gp EDc Ss 0q(not completed)  
Miniac (Marchant System) / Marchant Research Inc., Oakland, Calif. / Gp EDc Ss Sq(at least 3; on order, at least 2)  
Modac 404 (Mountain Digital Automatic Computer

(cont'd on page 94)

Manuscript Notice (cont'd from p. 89)

and which at the same time is a good story. Ordinarily, the length should be 1000 to 4000 words.

**Discussion.** We desire to print in "Forum" brief discussions, arguments announcements, news, letters, descriptions of remarkable new developments, etc., anything likely to be of substantial interest to computer people.

**Payments.** In many cases, we make small token payments for articles, papers, and fiction, if the author wishes to be paid. The rate is ordinarily  $\frac{1}{2}$ ¢ a word, the maximum is \$20, and both depend on length in words, whether printed before, whether article or paper, etc.

#### SPECIAL ISSUES OF

#### "COMPUTERS AND AUTOMATION"

The June issue of "Computers and Automation" commencing with June, 1955, is a special issue, "The Computer Directory."

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... handles punched tape data  
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The Ferranti High Speed Tape Reader accelerates to full speed within 5 milliseconds and stops within 3 milliseconds. It has been in use at leading computer installations for over two years and has achieved a sound reputation for simplicity and reliability in regular operation.

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(2) Mark IIA model reads at speeds up to 400 characters per second, and stops within .1 inch.

**VERSATILE** Both models read either 5 level, 6 level or 7 level tape by simple adjustment of an external lever.

**SIMPLE** The tape is easily inserted without complicated threading. Lap or butt splices are taken without any difficulty. The same tape may be passed thousands of times without appreciable tape wear. The optical system has no lenses or mirrors to get out of alignment. Friction drive is independent of sprocket hole spacing.

**LARGE OUTPUT** Amplifiers are included for each channel, including a special squaring circuit for the sprocket hole signal. Output swing between hole and blank is greater than 20 volts.

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For use with long lengths of tape up to 1000 feet, spooling equipment operating up to 40 inches per second for take-up or supply is available separately.



**FERRANTI ELECTRIC, INC.**

30 Rockefeller Plaza New York 20, N. Y.

(cont'd from page 92)

#### Automatic Computers

404) / Mountain Systems, Inc., Thornwood, N.Y./  
Sp EDc Ss Sq(at least 2)

Modac 410 (Mountain Digital Automatic Computer 410) / Mountain Systems, Inc., Thornwood, N.Y./  
Sp EDc Ms ?q

Monrobot III, V, VI-MU, etc. / Monrobot Corp, subsidiary of Monroe Calculating Machine Co., Morris Plains, N. J. / Gp EDc Ls Sq(at least 4)

Mosaic (Ministry of Supply Arithmetical Integrator and Calculator) / Post Office Research Section, London, England; located at Radar Research Establishment, Malvern, England / Gp EDc Ls lq

MSAC (Moore School Automatic Computer) / Moore School of Electrical Engrg, Univ of Pa., Phila., Pa.; located there / Gp EDc Ls ?q

National Physical Laboratory Electronic Simulator / National Physical Laboratory, Teddington, England; located there / Gp EAc ?s lq

NATPAC (?) / North American Aviation Corp., Downey, Calif.; located there / Gp EDc Ss lq

Narec (Naval Research Electronic Computer) / Naval Research Lab., Washington, D. C.; located there / Gp EDc Ls lq

NBS computers (National Bureau of Standards computers): see Dyseac, Seac, Swac

NCR-CRC 102A (National Cash Register Computer Research Corp. 102A) / National Cash Register Co., Dayton 9, Ohio / Gp EDc Ss Mq(over 20)

NCR-CRC 102D (National Cash Register Computer Research Corp. 102D) / National Cash Register Co., Dayton 9, Ohio / Gp EDc Ms Sq

NCR 303 (National Cash Register Electronic Data Processor) / National Cash Register Co., Electronics Division, Hawthorne, Calif. / Gp EDc Ms ?q

Network Analyzer / Franklin Inst Labs for Research and Development, Phila., Pa.; located there / Gp EAc Ls lq

Network Analyzer -- AC / General Electric Company, Schenectady, N. Y.; located there / Gp EAc Ls lq

Network Analyzer -- DC / Central Electrica l Authority, London, England / Sp Ac ?s lq

Network Analyzer -- DC / General Electric Company, Schenectady, N. Y.; located there / Gp EAc Ls lq

Network Analyzer -- DC / Westinghouse Electric Co., Pittsburgh, Pa.; located there / Gp EAc Ls lq

Nicholas (Nickel Delay-Line Storage Computer) / Elliott Brothers Research Labs, Borehamwood, Herts, England; located there / Gp EDc Ss lq

Norc (Naval Ordnance Research Computer) / International Business Machines, New York; located at Naval Proving Ground, Dahlgren, Va. / Gp EDc Ls lq

Norwegian Computer / Central Institute, Royal Norwegian Council for Scientific and Industrial Research, Norway; located at Norwegian Computing Centre, Oslo University, Blindern, Norway / Gp EDc Ms lq

Oarac / General Electric Co, Syracuse, N. Y.; located at U. S. Air Force, Aeronautical Research Lab, Wright-Patterson Air Force Base, Dayton, Ohio / Gp EDc Ms lq

Olivetti GBM (Olivetti General Bookkeeping Machine) / Olivetti Corp. of America, New York / Sp EDc Ss ?q

Ombac / Aeronautical and Ordnance Systems Div., General Electric Co., Schenectady, N. Y.; located there / Gp EDc Ls lq

ONR Relay Computer (Office of Naval Research) / - located at Logistics Research Project, George Washington Univ., Washington, D. C. / Gp EDc Ms lq

Oracle (Oak Ridge Automatic Computer and Logical Engine) / Argonne National Lab, Chicago; located at Oak Ridge National Lab, Oak Ridge, Tenn. / Gp EDc Ls lq

Ordfiac -- same as Elecom 200, which SEE

Ordvac / Univ. of Illinois, Urbana, Ill.; located at Ballistic Research Labs, Aberdeen Proving Ground, Aberdeen, Md / Gp EDc Ls lq

Pegasus (Ferranti Pegasus Computer) / Ferranti Ltd, Ferranti Electric, Inc., New York 20, N. Y. / Gp EDc Ms lq(on order, at least 10)

Pennstac (Pennsylvania State Univ. Automatic Computer) / Pennsylvania State Univ., Dept. of Electrical Engineering, State College, Pa. / Gp EDc Ms ?q

Perm (Programmgesteuerte Elektronenrechenmaschine Munchen) / Technische Hochschule, Munchen, Germany / Gp EDc Ls lq

Philbrick Computer / G A Philbrick Research, Inc., Boston, Mass. / Gp EAc Ms Lq

Ptera (Postal Telecommunications Electronic Automatic Calculator) / Central Laboratory of the Postal and Telecommunications Services, the Hague, Netherlands / Gp EDc Ls lq

R-PAC (Recorder Playback Automatic Computer)/Penn State College, State College, Pa.; located there / Sp EAc Ss lq

R 4 S / Eidgenossische Technische Hochschule, Zurich, Switz.; to be located there / Gp EDc Ls 0q

Rand Computer -- SEE Johnniac

Rand Junior Johnniac / Rand Corp., Santa Monica, Calif.; located there / Sp EDc Ss lq

Rascal (Royal Air Force Sequence Controlled Calculator Mark II) / Royal Aircraft Establishment, Farnborough, Hampshire, England; located there / Gp EDc Ms lq

Raycom (Raytheon Computer) / Datomatic Corp., Needham, Mass. / Gp EDc Ls 0q

Raydac (Raytheon Digital Computer) / Raytheon Mfg. Co., Waltham, Mass.; located at Naval Air Missile Test Center, Pt. Mugu, Calif. / Gp EDc Ls lq

RCA Bizmac -- SEE Bizmac

Reac 200, 300 / Reeves Instrument Co, New York / Gp EAc Ls Ms Lq

Readix (Rea Computer) / J. B. Rea Company, Inc., Santa Monica, Calif. / Gp EDc Ss lq(on order, at least 6)

Rechenautomat IPM / Institut fur Praktische Mathematik, Technische Hochschule, Darmstadt, Germany; located there / Gp EDc Ls lq

Remington Rand 409, 409-2R, 409-2M / Remington Rand, Inc., New York / Gp EDc Ss Lq

Remington-Rand 409 Computer / Remington Rand, New York / Gp EDc Ss ?q

Sapo (?) / ?, Prague, Czechoslovakia; located there / Gp EDc Ss lq

S.E.A. Analog Computer / S.E.A., Courbevoie, France located there / Gp Ac ?s lq

Seac (Standards Eastern Automatic Computer) / National Bureau of Standards, Washington, D. C.; located there / Gp EDc Ls lq

Sec (Simple Electronic Computer) / Birkbeck College, Univ. of London, London, England/located there / Sp EDc Ss ?q

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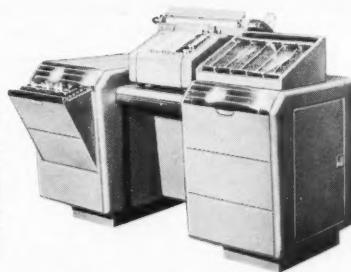
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(cont'd from page 94)

**Automatic Computers**

S-FAC (Structure Factor Analog Computer) / Penn State College, State College, Pa.; located there / Sp EAc Ss 1q

Simon / Berkeley Enterprises, Inc., New York, and others / Sp RDc Ss 3q

Simiplac (Simple Automatic Electronic Computer) / Berkeley Enterprises, Inc., N.Y. / Gp EDc Ss 0q

Spec (Special Purpose Electronic Computer) or USAF-Fairchild Computer / NEPA Project, Fairchild Engine and Airplane Co., Oak Ridge, Tenn. / Sp EDc Ms 0q (dismantled)

Statac (Statistical Automatic Computer) / National Bureau of Standards, Washington, D. C.; located there / Sp Dc ?s 1q

Stevens Institute of Technology Digital Differential Analyzer / Experimental Towing Tank, Stevens Institute of Technology, Hoboken, N. J. / Sp EDc Ms 1q

Swac (Standards Western Automatic Computer) / National Bureau of Standards, Los Angeles, Calif.; located at Univ. of Calif., Dept. of Math., Numerical Analysis Research, Los Angeles 24, Calif. / Gp EDc Ls 1q

TAC (Tokyo Automatic Computer) / Tokyo Shibaura Electric Manufacturing Co., Tokyo, Japan; located at the Univ. of Tokyo, Tokyo, Japan / Gp EDc Ls 1q

TC-1 / International Telemeter Corp., Los Angeles, Calif. / Gp EDc Ls 0q (discontinued)

Technitrol 180 / Technitrol Engineering, Philadelphia 33, Pa. / Gp EDc Mc 1q

Teleregister Speeddh (Teleregister Special Purpose Electronic Digital Data Handling) / The Teleregister Corp., Stamford, Conn. / Sp EDc ?s Sq(at least 4; on order, at least 3)

Tim II (The Inventory Machine II) / Laboratory for Electronics, Boston, Mass. / Gp EDc Ss 1q

Tokyo Mark I / Laboratory of Applied Mathematics, Electrotechnical Laboratory, Tokyo, Japan; located there / Sp RDc Ss 1q

Tokyo Mark II / Laboratory of Applied Mathematics, Electrotechnical Laboratory, Tokyo, Japan; located there / Gp RDc Ls 1q

TRE Computer (Telecommunications Research Establishment Computer) / Telecommunications Research Establishment, Great Malvern, England; located there / Gp EDc Ls 1q

Tridac / Royal Aircraft Establishment, England / Sp Ac ?s 1q

Typhoon Computer / Radio Corporation of America, Princeton Laboratories, N. J. located ? / Gp EAc Ls 1q

Udec I (Unitized Digital Electronic Computer, I / Burroughs Corp., Philadelphia, Pa; located at Wayne Univ., Computation Laboratory, Detroit, Mich. / Gp EDc Ls 1q

Udec II (Unitized Digital Electronic Computer, II / Burroughs Corp., Paoli, Pa. / Gp EDc Ls 2q

Univac (Universal Automatic Computer) / Eckert-Mauchly Div., Remington Rand Div., Sperry Rand Corp., Phila., Pa. / Gp EDc Ls Mq(at least 22; many on order)

Univac II (Universal Automatic Computer II) / Eckert-Mauchly Div., Remington Rand Div., Sperry Rand Corp., Phila., Pa. / Gp EDc Ls q: (this is a compatible modification of Univac, to use magnetic core memory instead of mercury delay line memory, applicable to existing or new Univacs)

Univac 60 — same as Remington Rand 409, which see

Univac 120 — same as Remington Rand 409-2, which see

Univac Scientific Computer ERA 1101 / Engineering Research Associates Div., Sperry Rand Corp., St. Paul, Minn.; located at Rich Electronic Computing Center, Georgia Inst. of Technology, Atlanta, Ga. / Gp EDc Ls 1q

Univac Scientific Computer ERA 1102 / Engineering Research Associates Div., Sperry Rand Corp., St. Paul, Minn. / Gp EDc Ls 3q

Univac Scientific Computer ERA 1103, 1103A (Engineering Research Associates Div., Sperry Rand Corp., St. Paul, Minn. / Gp EDc Ls Mq (at least 10)

Ural (initials for Russian of "universal electronic computing machine") / ?, U.S.S.R. / Gp EDc Ms Sq(?)

Utec (Univ. of Toronto Electronic Computer) / McLellan Lab., Univ. of Toronto, Toronto, Canada; located there / Sp EDc Ss 11q

Wedilog (Wang Electronic Digital-Analog Differential Analyzer) / Wang Laboratories, Cambridge 41, Mass.; located there / Sp EDc Ss 1q

Whirlwind I / Digital Computer Lab., Mass. Inst. of Technology, Cambridge 39, Mass.; located there / Sp EDc Ls 1q

Whitesac (White Sands Automatic Computer) -- see CRC 106

Wisc (Wisconsin Integrally Synchronized Computer) / Univ. of Wisconsin, Electrical Engrg. Dept., Madison, Wisc.; located there / Gp EDc Ls 1q

X-RAC (x-ray analog computer) / Penn State College, State College, Pa.; located there / Sp EAc Ms 1q

Zuse Model IV / Konrad G. Zuse, Neukirchen, Germany; located at Swiss Federal Inst. of Techn., Zurich, Switzerland / Gp RDc Ls 1q

Zuse Model 5 / Konrad G. Zuse, Neukirchen, Germany; located at Leitz Optical Works, Wetzlar, Germany / Gp RDc Ss 1q

ASSOCIATION FOR COMPUTING MACHINERY,  
MEETING, AUGUST, 1956, LOS ANGELES

The annual meeting of the Association for Computing Machinery will be held on the University of California Westwood Campus, Los Angeles, August 27-29, 1956. For information write G. W. King, Box 3251, Olympic Station, Beverly Hills, California.

Did you see our story in Life Magazine, March 19, pp 173-176?

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Electric Brain  
Construction Kit No. 1

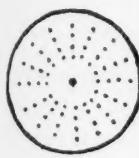


Diagram of the versatile multiple switch, which can be assembled to make any switch combination from 16 decks of 2 positions, to 2 decks of 16 positions.

This kit is an introduction to the design of arithmetical, logical, reasoning, computing, puzzle-solving, and game-playing circuits. It is simple enough for intelligent boys to assemble, and yet is instructive to computer men because it shows how many kinds of computing and reasoning circuits can be made from simple components.

With this kit and 64-page manual, you can easily make over 30 small electric brain machines that exhibit intelligent behavior. Each runs on one flashlight battery. All connections with nuts and bolts; no soldering required. Price, \$17.95 (add 80¢ for shipment in U. S. west of Mississippi, \$1.80 for shipment outside U. S.). If not satisfactory, returnable in seven days for full refund.

A few of the machines you can make:  
Logic Machines: Reasoning, Syllogism Machine, Intelligence Testing. Game-playing Machines: Nim, Tit-tat-toe. Arithmetic Machines: Adding, Subtracting, Multiplying, Dividing, Carrying, etc. Cryptographic Machines: Secret Coder and Decoder, Combination Locks. Puzzle Machines: The Space Ship Airlock, The Fox Hen Corn and Hired Man, Douglas Macdonald's Will, The Uranium Ship and the Space Pirates.

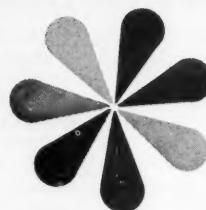
Mail this Request  
or a Copy of It

Berkeley Enterprises, Inc.  
815 Washington St., R162  
Newtonville 60, Mass.

Please send me Geniac Kit No. 1 and Manual. Price, \$17.95 (add 80¢ for shipment in U. S. west of Mississippi, \$1.80 for shipment outside U. S.) I enclose \_\_\_\_\_ in full payment. (If in good condition, it is returnable in seven days for full refund.) My name and address are attached.

## OPPORTUNITY IN SOUTHERN CALIFORNIA

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in long-range, non-military  
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### FOR ADVANCED BUSINESS COMPUTER SYSTEMS

### SENIOR ELECTRONICS ENGINEERS

To specialize in research and design for advanced business computer systems. Must have exceptional creative ability, plus knowledge of vacuum tube circuit design, transistor circuitry.



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For projects in advanced computer design, development and application. Must have thorough knowledge of digital computer logic and circuitry, input-output devices, programming.

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For advanced research and design in computer transistor circuitry. Capabilities should include ability to direct others in new project work.

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Background in one or more of the fields below equips you for excellent career positions with NCR Electronics Division:

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APPLICATIONS OF PHYSICS • COMPUTER SYSTEMS SPECS.  
DEF. OF SYSTEM REQUIREMENTS

## "GROUND FLOOR" OPPORTUNITY WITH UNUSUAL STABILITY

Openings listed here are for the basic organization of the NCR Electronics Division. If you qualify for one of them, you'll be a key member of this fast-developing division of one of America's top companies. You'll enjoy the freedom of a small, select research group — operated by engineers for engineers — as well as the exceptional financial stability of a large, long-established firm. A full program of employee benefits, too. New, modern, air-conditioned plant with every modern research and development facility in a conveniently situated Los Angeles suburb.

\* For illustrated company brochure, write Director of Personnel.

*National*®



TRADEMARK REG. U. S. PAT. OFF.

NATIONAL CASH REGISTER COMPANY  
ELECTRONICS DIVISION 3348 West El Segundo Blvd., Hawthorne, Calif.

## COMPUTERS AND AUTOMATION — Back Copies

REFERENCE INFORMATION: (with notes regarding latest issues containing same)

### Organizations:

- Roster of Organizations in the Computer Field (June, 1956)
- Roster of Computing Services (June, 1956)
- Roster of Consulting Services (June, 1956)

### Computing Machinery and Automation:

- Types of Automatic Computing Machinery (Dec. 1955)
- Roster of Automatic Computers (June, 1956)
- Outstanding Examples of Automation (July 1954)
- Commercial Automatic Computers (Dec. 1954)
- Types of Components of Automatic Computing Machinery (March 1955)

### Products and Services in the Computer Field:

- Products and Services for Sale or Rent (June 1956)
- Classes of Products and Services (June 1956)

### Words and Terms:

- Glossary of Terms and Expressions in the Computer Field (Jan. 1956)

### Information and Publications:

- Books and Other Publications (many issues)
- New Patents (nearly every issue)
- Roster of Magazines (Dec. 1955)
- Titles and Abstracts of Papers Given at Meetings (many issues)

### People:

- Who's Who in the Computer Field (June, 1955, and later issues)

July, 1955: Mathematics, the Schools, and the Oracle — Alston S. Householder

The Application of Automatic Computing Equipment to Savings Bank Operations — R. Hunt Brown

The Book Reviewer — Rose Orente

Linear Programming and Computers, Part I — Chandler Davis

August: The Automation of Bank Check Processing — R. Hunt Brown

Linear Programming and Computers, Part II — Chandler Davis

Justifying the Use of an Automatic Computer — Ned Chapin

Charting on Automatic Data Processing Systems — Harry Eisenpress, James L. McPherson, and Julius Shiskin

A Rotating Reading Head for Magnetic Tape and Wire — National Bureau of Standards

Some Curiosities of Binary Arithmetic Useful in Testing Binary Computers — Andrew D. Booth

September: A Big Inventory Problem and the IBM 702 — Neil Macdonald

Publications for Business on Automatic Computers: A Basic Listing — Ned Chapin

Franchise — Isaac Asimov

Automatic Coding for Digital Computers — G. M. Hopper

Automatic Programming: The A-2 Compiler System — Part 1

October: The Brain and Learned Behavior — Dr. Harry F. Harlow

Automatic Programming: The A-2 Compiler System — Part 2

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Automatic Mixup — Lawrence M. Clark

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Growth of IBM Electronic Data-Processing Operations on the West Coast — Neil D. Macdonald

Translating Spoken English into Written Words — E. C. Berkeley

IBM Trust Suit Ended by Decree

April: Computing Machines and Automation — A. V. Astin

Tape Identification and Rerun Procedures for Tape Data Processing Systems — L. Eselson

May: The Position of the University in the Field of High Speed Computation and Data Handling — Alston S. Householder

Free Use of the Toronto Computer, and Remote Programming of it — C. C. Gotlieb and others

The Mechanized Muse — Elizabeth W. Thomas

BACK COPIES: Price, if available, \$1.25 each, except June, 1955, \$4.00. Vol. 1, no. 1, Sept. 1951, to vol. 1, no. 3, July, 1952: out of print. Vol. 1, no. 4, Oct. 1952: in print. Vol. 2, no. 1, Jan. 1953, to vol. 2, no. 9, Dec. 1953: in print, except March, no. 2, May, no. 4, and July, no. 5. Vol. 3, no. 1, Jan. 1954, to vol. 3, no. 10, Dec. 1954: in print. Vol. 4, 1955, no. 1 to 12, in print. Vol 5, 1956, in print.

A subscription (see rates on page 6) may be specified to begin with the current month's or the preceding month's issue.

### WRITE TO:

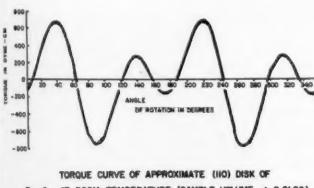
Berkeley Enterprises, Inc.  
Publisher of COMPUTERS AND AUTOMATION  
815 Washington St., R 162  
Newtonville 60, Mass.

# putting IDEAS to work—research at IBM

- **Merry-go-round:** Automatic magnetic torque balance, accurate to 0.0006 inch-ounce, used to measure magnetic anisotropy of memory core materials. IBM Bulletin No. 100.
- **Trigger Happy Transistor:** Used in place of a thyratron, new transistor permits high-speed switching of large currents by a low-power electrical pulse. IBM Bulletin No. 101.
- **Incubator Hatched:** Tube elements spaced 1/5000 of an inch apart; assembled in the Very Clean Room.

## Merry-go-round

Adding "memory" to machines is no longer a scientist's fancy. It is a fact. Actually, this ability to "remember" is the ability to "recall" information previously entered into the machine. One of the latest and best ways of storing information utilizes the now familiar small, rugged, reliable magnetic cores. Each letter or numeral is stored in a kind of a "Morse code," where a dash is represented by one direction of magnetization and a dot by the other. But, to employ cores more effectively, the IBM Research people are studying a number of very basic things having to do with ferrites. One of these is magnetic anisotropy—which involves the continual measurement of the minute torque exerted in a magnetic crystal by a rotating external magnetic field.



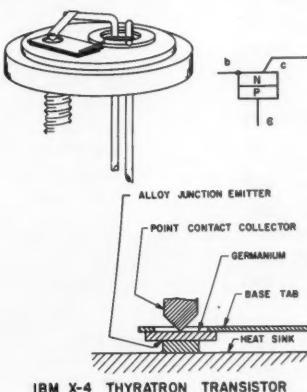
To increase the speed and accuracy of measurement of this property, Ralph Penoyer, of our Ferrite Materials Research Group, has developed an automatic magnetic torque balance that is accurate to 0.0006 inch-ounce, and allows the direction of the magnetic field to change through a  $360^\circ$  arc in one minute. Obtaining and plotting such data was, by standard methods, a laborious, time-consuming process.

Full details describing the device, circuit diagrams, method of operation, calibration and accuracy are available in IBM Bulletin No. 100. Write for your copy.

## Trigger Happy Transistor

Everybody is talking about transistors. But, certain problems are not readily solvable by the use of conventional transistors. A typical problem is that of picking up a relay with a transistor controlled by microsecond pulses. So Richard Rutz, of our Semi-Conductor Devices Research Group, took a long look at transistor possibilities in this case. The result: The IBM X-4 Transistor. This new type permits high-speed switching of large currents by low-power electrical pulses. It operates with a turn-on time of two ten-millionths of a second and a turn-off time of one-millionth of a second; experimental models have been made to switch currents as high as 15 amperes.

You can find full scientific data on the X-4, its construction, electrical characteristics, and circuit applications in IBM Bulletin No. 101.



## Incubator Hatched

Dirt, dust and moisture are death to delicate electrical devices. In our experimental component assembly room—which we call the Very Clean Room—at our Poughkeepsie Research Laboratory, we've eliminated the scourges. How do we keep the Very Clean Room clean?



Clean, temperature- and humidity-controlled air is blown into the room, keeping the pressure inside greater than outside. Therefore, when one enters from the outside no dirt enters with him. As a further precaution, he must wear a lintless nylon lab coat over his clothing. Dry, clean, compressed nitrogen replaces compressed air to blow off particles of dirt that may accumulate on an assembly. Since a great deal of work in this room is done under microscopes, with wire as small as one-sixth the diameter of the average human hair, controlled atmospheric conditions are vital.

RESEARCH at IBM means IDEAS at work. For bulletins mentioned above, write Dept. CA-6, International Business Machines Corp., 590 Madison Ave., New York 22, N.Y.

## ADVERTISING IN "COMPUTERS AND AUTOMATION"

Memorandum from Berkeley Enterprises, Inc.  
Publisher of COMPUTERS AND AUTOMATION  
815 Washington St., Newtonville 60, Mass.

1. What is "COMPUTERS AND AUTOMATION"? It is a monthly magazine containing articles, papers, and reference information related to computing machinery, robots, automatic control, cybernetics, automation, etc. One important piece of reference information published is the "Roster of Organizations in the Field of Computers and Automation". The basic subscription rate is \$5.50 a year in the United States. Single copies are \$1.25, except June, 1955, "The Computer Directory" (164 pages, \$4.00). For the titles of articles and papers in recent issues of the magazine, see the "Back Copies" page in this issue.

2. What is the circulation? The circulation includes 2100 subscribers (as of May 10): over 300 purchasers of individual back copies; and an estimated 3000 nonsubscribing readers. The logical readers of COMPUTERS AND AUTOMATION are people concerned with the field of computers and automation. These include a great number of people who will make recommendations to their organizations about purchasing computing machinery, similar machinery, and components, and whose decisions may involve very substantial figures. The print order for the May issue was 2700 copies. The overrun is largely held for eventual sale as back copies, and in the case of several issues the overrun has been exhausted through such sale.

3. What type of advertising does COMPUTERS AND AUTOMATION take? The purpose of the magazine is to be factual and to the point. For this purpose the kind of advertising wanted is the kind that answers questions factually. We recommend for the audience that we reach, that advertising be factual, useful, interesting, understandable, and new from issue to issue. We reserve the right not to accept advertising that does not meet our standards.

4. What are the specifications and cost of advertising? COMPUTERS AND AUTOMATION is published on pages 8 1/2" x 11" (ad size, 7" x 10") and produced by photooffset, except that printed sheet advertising may be inserted and bound in with the magazine in most cases. The closing date for any issue is approximately the 10th of the month preceding. If possible, the company advertising should produce final copy. For photooffset, the copy should be exactly as desired, actual size, and assembled, and may include typing, writing, line drawing, printing, screened half tones, and any other

copy that may be put under the photooffset camera without further preparation. Unscreened photographic prints and any other copy requiring additional preparation for photooffset should be furnished separately; it will be prepared, finished, and charged to the advertiser at small additional costs. In the case of printed inserts, a sufficient quantity for the issue should be shipped to our printer, address on request.

Display advertising is sold in units of a full page (ad size 7" x 10", basic rate, \$190) two-thirds page (basic rate, \$145), and half page (basic rate, \$97), and quarter page (basic rate, \$52); back cover, \$370; inside front or back cover, \$230. Extra for color red (full pages only and only in certain positions), 35%. Two-page printed insert (one sheet), \$320; four-page printed insert (two sheets), \$590. Classified advertising is sold by the word (60 cents a word) with a minimum of 20 words.

5. Who are our advertisers? Our advertisers in recent issues have included the following companies, among others:

Aircraft-Marine Products, Inc.  
American Bosch Corp.  
Ampex Corp.  
Armour Research Foundation  
Arnold Engineering Co.  
Automatic Electric Co.  
Bendix Aviation Corp.  
Cambridge Thermionic Corp.  
Epsco, Inc.  
Ferranti Electric Co.  
Ferroxcube Corp. of America  
General Electric Co.  
Hughes Research and Development Lab.  
International Business Machines Corp.  
Lockheed Aircraft Corp.  
Lockheed Missile Systems  
Logistics Research, Inc.  
The Glenn L. Martin Co.  
Monrobot Corp.  
Norden-Ketay Corp.  
Northrop Aircraft, Inc.  
George A. Philbrick Researches, Inc.  
Potter Instrument Co.  
Ramo-Wooldridge Corp.  
Reeves Instrument Co.  
Remington Rand, Inc.  
Republic Aviation Corp.  
Sprague Electric Co.  
Sylvania Electric Products, Inc.

# Electronic Computers on your staff

Now, any business, large or small, can put electronic computers to work to cut costs and increase efficiency.

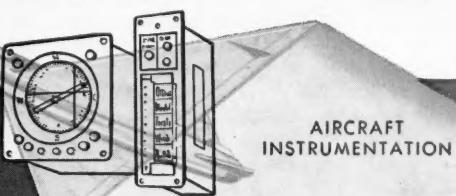
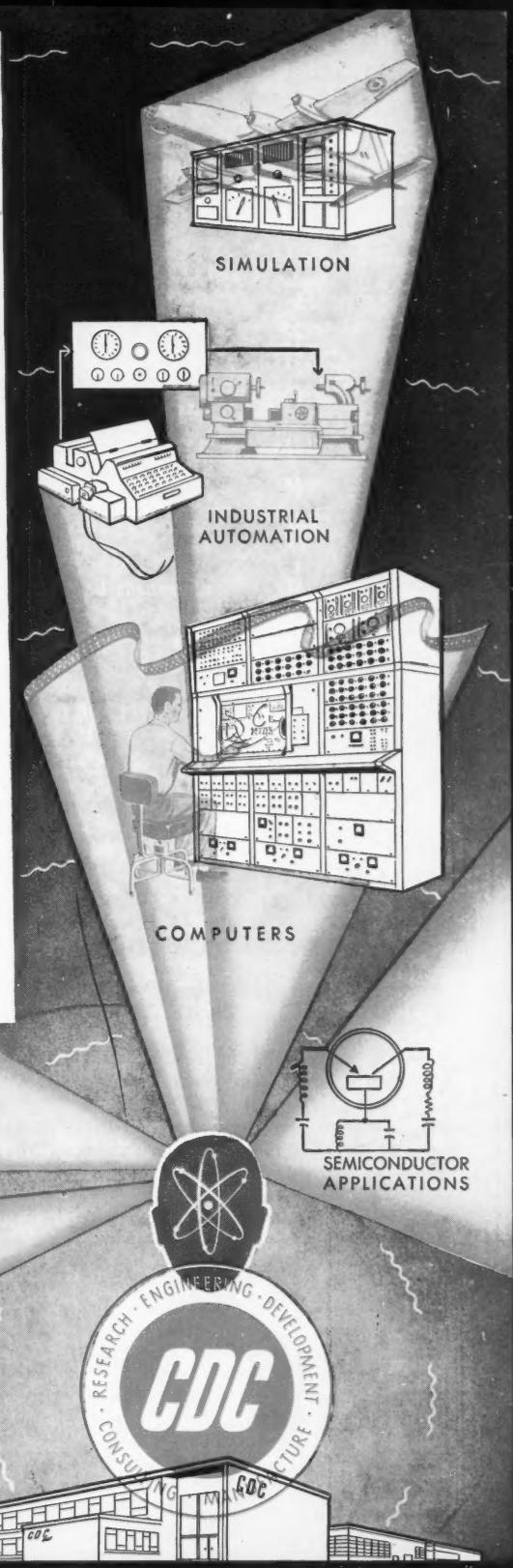
C.D.C. is proud to announce Canada's first **Data Processing Centre** established by private enterprise. Located at the Company's Head Office in Ottawa, this centre is available to serve government and industry in any part of Canada.

## USE OUR SERVICE...

- ... If you are planning to obtain your own computing facilities, you can have C.D.C. test your procedures and solve specimen problems using this centre.
- ... If you have your own computing facilities, you can transfer your peak loads or overloads to C.D.C.
- ... If you cannot justify having your own computing facilities, you can make use of those at this centre.
- ... If you are confronted with an unusually difficult research problem, you may find you have neither the necessary staff nor sufficient facilities — in such a situation, the C.D.C. Computing Centre will be found invaluable.
- ... If you have continually recurring computing or data processing problems, you can arrange to lease communication facilities linking your office directly with the C.D.C. Centre.

Highly qualified and experienced applied mathematicians and engineers, backed by the latest computer facilities, both digital and analog, are at your service for problem formulation and analysis, programming, computation, data reduction, application of data processing equipment to business procedures, practical instruction in computer operation and programming.

5604R



AIRCRAFT  
INSTRUMENTATION



GUIDED MISSILE ANALYSIS



**COMPUTING DEVICES OF CANADA LIMITED**

P.O. BOX 508 • OTTAWA • CANADA

## ADVERTISING INDEX

The purpose of COMPUTERS AND AUTOMATION is to be factual, useful, and understandable. For this purpose, the kind of advertising we desire to publish is the kind that answers questions, such as: What are your products? What are your services? And for each product, What is it called? What does it do? How well does it work? What are its main specifications?

Following is the index and a summary of advertisements. Each item contains: Name and address of the advertiser / subject of the advertisement / page number where it appears / CA number in case of inquiry (see note below).

Arma Division, American Bosch Corp., Roosevelt Field, Garden City, L.I., N.Y. / Digital Engineers / Page 81 / CA No. 1

Arma Division, American Bosch Corp., Roosevelt Field, Garden City, L.I., N.Y. / Inertial Navigation / Page 83 / CA No. 2

Armour Research Foundation of Illinois Inst. of Tech., 10 W. 35 St., Chicago 16, Ill. / Employment Opportunities / Page 96 / CA No. 3

Audio Devices, Inc. 444 Madison Ave., New York 22, N.Y. / Magnetic Tape and Discs / Page 67 / CA No. 4

Automatic Electric Sales Corp., 1033 W. Van Buren St., Chicago 7, Ill. / Miniature Stepping Switch / Page 103 / CA No. 5

Bendix Computer Div., Bendix Aviation Corp., 5630 Arbor Vitae St., Los Angeles 45, Calif., / General Purpose Computer / Page 69 / CA No. 6

Bendix Pacific Div., Bendix Aviation Corp., North Hollywood, Calif. / Digital Calendar Clock / Page 81 / CA No. 7

Berkely Enterprises, Inc., 815 Washington St., Newtonville 60, Mass. / Publications, Robot Show Stoppers, Geniac Kit / Pages 77, 80, 91, 97 / CA No. 28

Bryant Chucking Grinder Co., P.O. Box 620-K, Springfield, Vermont / Magnetic Drums / Page 91 / CA No. 8

Burroughs Corp., Research Center, Paoli, Pa. / Employment Opportunities / Page 95 / CA No. 9

C. P. Clare & Co., 3101 Pratt Blvd., Chicago 45, Ill. / Relays / Page 2 / CA No. 10

Commercial Controls Corp. (Flexowriter), Rochester 2, N.Y. / Use Flexowriter / Page 87 / CA No. 11

Computers and Automation, 815 Washington St., Newtonville 60, Mass. / Back Copies, Advertising / Pages 98, 100 / CA No. 29

Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa, Canada / Electronic Computers / Page 101 / CA No. 12

Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N.Y. / High Speed Tape Reader / Page 93 / CA No. 13

Ferroxcube Corp., East Bridge St., Saugerties, N.Y. / Magnetic Core Materials / Page 83 / CA No. 14

General Ceramics Corp., Keasbey, N.J. / Memory Storage Planes / Page 3 / CA No. 15

General Electric Co., Electronics Div., Tube Dept., Schenectady, N.Y. / "First General Electric" / Pages 51-52 / CA No. 16

General Electric Co., (Hanford Atomic Products), Richland, Washington / Help Wanted / Page 71 / CA No. 17

IBM Corp., 590 Madison Ave., New York 22, N.Y. / Ideas at Work / Page 99 / CA No. 18

Lockheed Aircraft Corp., Calif. Div., Burbank, Calif. / Training Programs / Page 85 / CA No. 19

McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y. / Book Club / Page 4 / CA No. 20

National Cash Register Co., Electronics Div., 3348 W.E. 1 Segundo Blvd., Hawthorne, Calif. / Digital Computer Engineers / Page 97 / CA No. 21

Northrop Aircraft, Inc., Hawthorne, Calif. / Employment Opportunity / Page 77 / CA No. 22

Princeton University Press, Princeton, N.J. / "Automata Studies" / Page 71 / CA No. 23

R.C.A. Service Co., Inc., Missile Test Project, P.O. Box 1226, Melbourne, Fla. / Help Wanted / Page 67 / CA No. 24

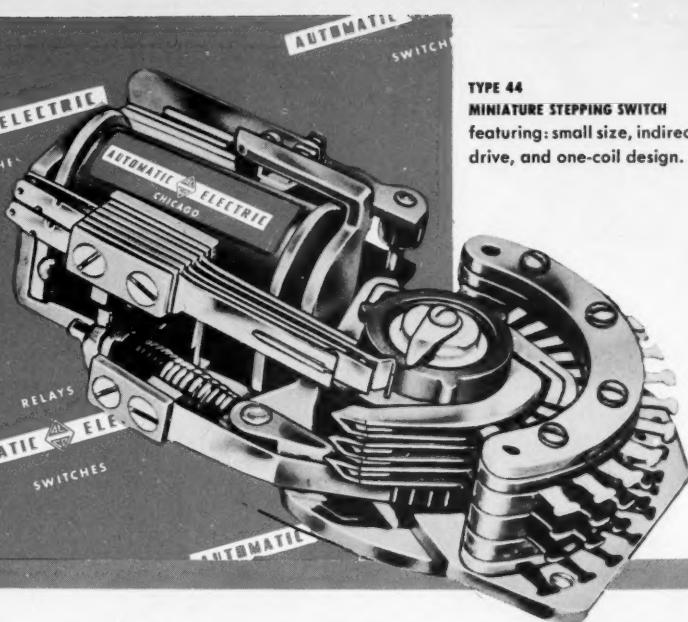
The Rand Corp., 1700 Main St., Santa Monica, Calif. / Opportunities in Computer Programming / Page 87 / CA No. 25

Sylvania Electric Products Inc., 1740 Broadway, New York 19, N.Y. / Diodes / Page 104 / CA No. 26

Sylvania Electric Products, Inc., Electronic Systems Div., 10Q First Avenue, Waltham 54, Mass. / Computer Systems / Page 89 / CA No. 27

### READER'S INQUIRY

If you wish more information about any products or services mentioned in one or more of these advertisements, you may circle the appropriate CA Nos. on the Reader's Inquiry Form on p.84 and send that form to us (we pay postage; see the instructions). We shall then forward your inquiries, and you will hear from the advertisers direct. If you do not wish to tear the magazine, just drop us a line on a postcard.



**TYPE 44**  
**MINIATURE STEPPING SWITCH**  
featuring: small size, indirect  
drive, and one-coil design.

# Well-Adjusted for a long, active life

**200,000,000 operations,  
with little  
or no adjustment!**

*This rugged little stepping switch is racking up an outstanding service record in countless operations. It's Automatic Electric's Type 44 Miniature Stepping Switch, now going into more products than ever before!*

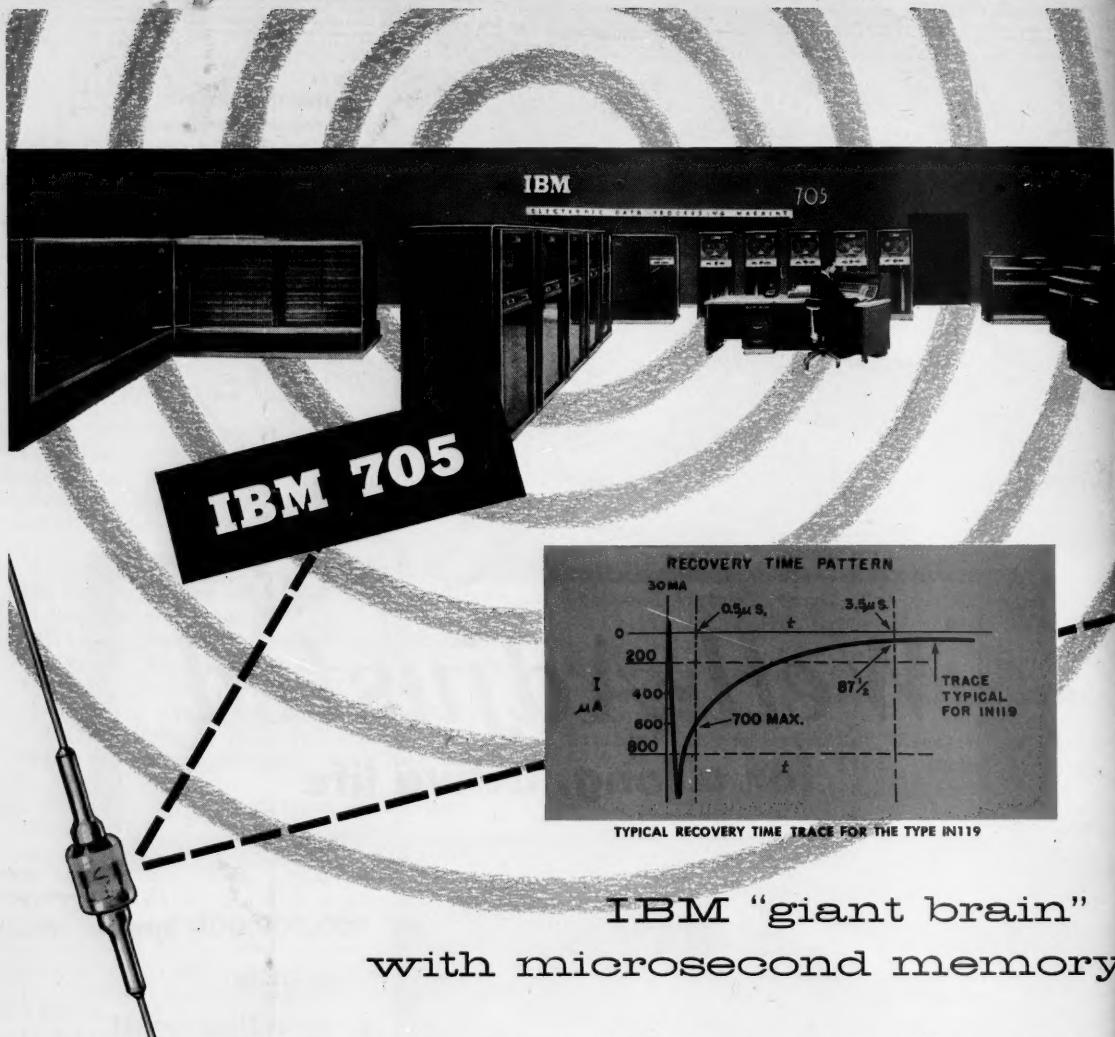
Its cost-reducing features are impressive. One-coil design eliminates a separate release coil. Indirect drive gives smooth, high-speed stepping. There's no wiper "double loading" or galloping. Here's the first compact, lightweight switch for 10-, 20- or 30-point operations. Use any dc voltage up to 110 (with rectifier, up to 115 volts, 60 cycles, ac).

To improve your products without raising costs, get the full details on Type 44 and Automatic Electric's complete line of stepping switches. Write to: Automatic Electric Sales Corporation, 1033 West Van Buren Street, Chicago 7, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., Toronto. Offices in principal cities.

**AUTOMATIC**  **ELECTRIC**

*Originators of the dial telephone • Pioneers in automatic control*





IBM "giant brain"  
with microsecond memory  
...incorporates Sylvania diodes  
with fast recovery time

The IBM 705 is a "giant brain" general purpose data processing system which incorporates unique flexibility of input-output devices. Its Magnetic Core Memory can recall data at the rate of 9 millionths of a second per character.

To meet the 705's requirements for speed, Sylvania Crystal diodes are designed and measured for fast recovery time.

Recovery time tests, conducted on a 100% basis, are measured for maximum reverse current at 0.5 microseconds and 3.5 microseconds. Back resistance is swept dynamically between zero and -70 volts at 60 cycles and 55°C. Tests are also conducted on the types IN119 and IN120 for minimum drift, flutter, and hysteresis.

Sylvania produces a complete line of

computer diodes, produced and tested under the same standards as the IN119 and IN120. For applications requiring high forward conductance with excellent recovery time, Sylvania offers a complete line of V.L.I. (very low impedance) diodes.

Write for complete details on these as well as general purpose Sylvania diodes. Address Dept. F20R.



# SYLVANIA®

SYLVANIA ELECTRIC PRODUCTS INC.  
1740 Broadway, New York 19, N. Y.

In Canada: Sylvania Electric (Canada) Ltd.,  
University Tower Bldg., Montreal

LIGHTING • RADIO • TELEVISION • ELECTRONICS • ATOMIC ENERGY

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l tested  
IN119  
quiring  
excellent  
complete  
diodes.  
these as  
diodes.

RGY